JUL 27 1922

Business Failures Fewer—Page 233

THE IRON TRADE REVIEW

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Total Weekly Capacity 1,000,000—9"

Fire Clay Refractories of Highest Quality *for all Purposes*

We make a Specialty of Difficult Shapes

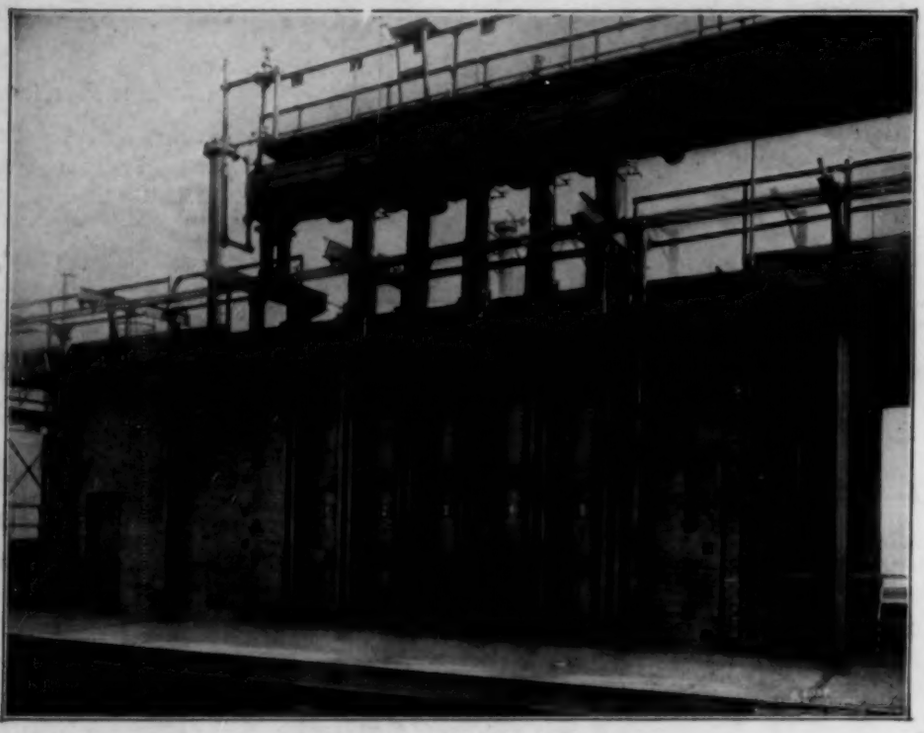
Interior View of Our No. 1 Plant at Lock Haven, Pa.

Queen's Run Refractories Co., Inc.
LOCK HAVEN, PA.

The New Koppers Oven

The Iron and Steel industry will welcome the development and successful operation of **THE NEW KOPPERS OVEN**, backed as it is by the accumulated knowledge and experience gained in designing and building over 6700 by-product coke ovens.

A battery of these **NEW KOPPERS OVENS** has been in operation at the plant of the Chicago By-Product Coke Co. since January. The average coking time has been under 11 hours and at times has been less than 10 hours. On this basis, each of these ovens has a coking capacity of from 25 to 26 tons of coal per day.



Battery of Five New Koppers Ovens

Remarkable as the above performance is, the quality of the coke produced is even more so. In stating that the use of coke made in these New Koppers Ovens will make possible greatly improved blast furnace practice and materially lower the consumption of coke per ton of iron produced, we are only repeating the unanimous opinion of the experts who have inspected these ovens and examined the coke produced.

We unhesitatingly recommend the **NEW KOPPERS OVEN** to our customers in preference to our old design.

The KOPPERS COMPANY
Designers and Builders of
By-Product Coke & Gas Ovens
PITTSBURGH, PA.

Vol. LXXI THE IRON TRADE REVIEW No. 4
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Priority Brings New Obstacles

Iron and Steel Plants in General Promise To Fare Less Favorably Under General Rationing Plan—15 Blast Furnaces Now Banked—Operating Difficulties Increase—Much Tonnage Being Declined—Railroads Buy Actively

RESORT of the government to priority regulations of car and coal supply in the present emergency promises to increase the operating difficulties for the iron and steel industry already sorely pressed for fuel and transportation. Under the declaration of the interstate commerce commission, iron and steel is grouped in the unpreferred fifth class along with general industry. Except as special exemption is granted, as likely to be in the case of tin plate and certain other lines of public necessity, the industry's needs are to be subordinated to those of a more vital nature. This is interpreted to mean, under the very best construction, added obstacles to the procurement by iron and steel producers and secondary manufacturers as well, of their essential needs of fuel and raw material. If those companies controlling mine properties are compelled to pool their coal output and equipment as is indicated, such ownership will prove of less advantage than it has in recent weeks in keeping these interest better supplied. The position of the Steel corporation in this respect is exciting interest.

Curtailment of production in the industry as the result of the combined strikes now has been extended to a total of 15 banked blast furnaces and to increasing irregularity of mill and steelworks activities. Rolling operations on the whole, however, as yet have been less affected than blast furnaces due to stocks of coal on hand. In the valleys the works have an average of 35 days' supply in stock. A number of plants, especially in the East are resorting to the use of fuel oil.

Coke Prices Soaring

Coke prices again have been bid up this week to a basis of $14.50 Connellsville ovens for prompt shipment. There is talk of a recurrence of the $20 prices in the feverish market days of August 1920. Coal has sold at $8 to $9. THE IRON TRADE REVIEW's European market cable shows 200,000 tons of Welsh coal sold to this country and much more under negotiation.

THE IRON TRADE REVIEW weekly composite of fourteen iron and steel products is up this week to $37.67 against $37.45 last week and $37.45 two weeks ago, due mainly to the advance in pig iron.

Spot Iron Jumps

Under a growing scarcity and the more uncertain position of the furnaces, pig iron for prompt shipment has advanced $1 to $2 per ton. Foundry iron has been sold at $28 base delivered Cleveland and Pittsburgh, and at $27 western Pennsylvania furnace. Buffalo No. 1X has brought $28 furnace and malleable $27. Chicago iron is quoted at $26 for prompt delivery. A Cleveland maker sold 5000 tons of basic at $25 furnace.

Equipment needs of the railroads brought more sharply to the front by the shopmen's strike, are a conspicuous feature. The week's orders for new cars total 1500 and for repairs, 15,000 with some thousands pending. Of the latter the 6000 placed by the Baltimore & Ohio and 3000 by the Illinois Central are largest items. The Pennsylvania is inquiring for 5000 tons of car plates in addition to 12,000 tons recently placed and the Norfolk & Western closed 3000 tons.

Structural steel awards have been heavy this week swelled by the 10,500 tons for the power plant of the Brooklyn Edison Co., Brooklyn and total 27,500 tons.

Many Orders Declined

The mills are declining tonnage on all sides both on account of their filled-up condition and the present doubt over raw steel supplies. Furthermore the shortage of skilled labor in the hot mills is a material factor. Tin plate makers have declined 1,000,000 boxes from canmakers who require this for the increased fruit and vegetable pack. Sheet tonnage is piling up because specifications exceed production. Automobile demands for sheets are keeping up especially from the Detroit district where builders have a daily production of approximately 11,000 cars scheduled for August. Elsewhere, however, the slowing down process in the automobile industry appears. Bar mills are badly congested.

These conditions are adding to the strength of prices and premiums are easily obtainable where definite delivery can be given. On plates, shapes and bars 1.80c Pittsburgh has become the more representative quotation. Warehouse prices have been advanced $3.

Business Trend and Chart Section Page 231

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Telling Industry's Story with Films

FOLLOWING a recent exhibition in Washington of the six-reel film entitled "The Story of the Automobile," depicting the most modern automobile manufacturing practice in the United States, diplomatic and trade representatives of 14 nations requested the department of commerce to route the film through their homelands. Simultaneously, the bureau of mines was announcing that its "The Story of Coal" was being dispatched from India for exhibition in Jugo-Slavia and Czecho-Slovakia.

These are only two indications of the place the motion picture has made for itself in the industrial world. In promoting industrial understanding at home and in furthering trade abroad it offers a service that is just being grasped. The film knows no language or race; except for its subheads it sweeps aside all linguistic barriers. In alien lands the novelty still appeals. And the cost—about $4000 for a 3-reel film—weighs little against the possibilities.

At this time the industrial film falls into two groups—the industry film and the company film. The former tells the story of an industry; the latter of an individual product. The outlets for these films are in the field abroad, regular motion picture theaters at home, and local societies, clubs and other organizations.

In the domestic field the great need at this time appears to be a routing organization. To fulfill this mission, the National Association of Manufacturers is undertaking not only to create industry films but also to route them in orderly fashion through 15,500 motion picture theaters playing daily to 16,000,000 persons. The possibilities of promoting sympathetic understanding on industrial problems are limitless, and more so considering that the 16,000,000 patrons are paying for it. To clubs and organizations seeking free films, the scruple against individual advertising does not enter, and here the company film is appended to the industry film.

In the foreign field the department of commerce has put its shoulder to the wheel with characteristic Hoover energy. The more than one thousand commercial representatives of the department in every foreign land constitute an unrivaled distributing organization. What is more, the department will help create the film; in fact, it offers every service except that of paying the bare cost of production. The exhibition of "The Story of the Automobile" in Hungary, for instance, will do more than create the desire for an automobile; it will engender respect for American industry and methods and serve to remove the barrier of ignorance and provincialism which breeds discord.

Metal Markets Made a Study

EDUCATIONAL pioneering along practical lines wherein a need exists not only reflects credit upon the originator, increases individual knowledge and adds freshness to routine thinking but what is more important, introduces a new field of service. Possibilities of this character are offered by the New York university in adding to its curriculum a course in which it is intended "to acquaint students with the fundamental facts underlying our mineral and raw materials situation." This endeavor should lead to the better equipping of numerous individuals with facts concerning metal markets which they can apply to actual conditions. Iron and steel market phenomena are understood by a relatively few individuals who have gained their interpretative ability through years of close association with conditions.

Beyond the fact that a certain number of students may become acquainted with the economic background of the metals industry, there is always the greater possibility that such a concerted effort may contribute suggestions of real value. Introduction of new ideas frequently leads to the

assimilation of plausible practices which had not been adopted because no one had given the time and thought necessary to their proper application. Research laboratories have an unquestioned value in practically every phase of modern progress. The chemistry of iron and steel, machine design and countless other activities were the result either directly or indirectly of research laboratories. The plan of the New York university will assist in placing on a more scientific plane information which now is more or less of the rule of thumb kind.

Zinc Emerges from Slump

ELEVEN months ago the zinc industry was submerged in the most serious depression of its history. Smelters' stocks of slab zinc totaled 92,408 tons, not including large stocks of both slab zinc and brass scrap, nor a large tonnage in the form of ore above ground. Shipments last summer averaged only 13,000 to 14,000 tons monthly, so at that time smelters' stocks were sufficient to take care of six or seven months' shipments at the then current rate. Prices declined below 4.25 cents per pound, East St. Louis, or to levels 25 per cent under the average price for 30 years. The business of producing zinc became so expensive that works were shut down drastically in districts all over the country.

In July the tide turned. Shipments began to exceed production and have continued to do so through the past 11 months. Smelters stocks as of June 30 were only 29,576 tons. Shipments in June amounted to 39,380 tons. Thus, stocks June 30 represented only about three weeks' shipments at the June shipment rate. These figures are enlightening as to the causes for the recent strength and activity of the zinc market. The invisible supplies of slab and scrap held by consumers have been absorbed largely, placing the market in even stronger position than the figures indicate. Prime western zinc prices have gained steadily and at present are about the 1913 average quotation. Little or no profit for most companies has been possible in the zinc business the past two or three years. The present outlook for the industry is hopeful.

Steel Mergers Not Inimical

THOSE who have applied the degree of study and of fact analysis necessary to permit a proper prospective of the subject will receive no surprise from the decision of Attorney General Daugherty that no public peril exists in the two consolidations of independent steel companies recently announced. The attorney general, while conceding that the union of these companies will bring about some lessening of competition, declares in effect that this is incidental and not of design. Furthermore, he goes on to establish by careful dissection of the producing capacities of the various plants that this limitation of competition is so small, as to be practically negligible.

The reasoning of the attorney general clearly gives much weight to the question of intent as to whether or not a business amalgamation should be considered contributory to or destructive of the common good. The courts similarly always have recognized the importance of this doctrine in the various actions which have dealt with business practices and combinations.

In the Bethlehem-Lackawanna and Midvale-Republic-Inland mergers, the intent, to be correctly adjudged, must be related to the conditions that have existed in the steel industry in recent years. With the domestic industry faced with a probable over-capacity as the result of war stimulus, with the need for greater and more diversified raw material resources than various companies individually can meet and with the advantages of correlated operations on a broad scale clearly demonstrated by the experience of the Steel corporation, the present movement toward consolidations clearly has been the result of economic pressure. In its last analysis, what these independent steel companies are endeavoring to do is to put themselves in better position to compete with the Steel corporation.

The attorney general has expressed sound law, both statutory and economic, in his finding and has contributed a document of public value.

Charts Are Preserved

Readers Make Constant and Practical Use of the Business Trend Section

THE writer believes that your business charts are invaluable to any one desiring to keep his finger on the pulse of business. You no doubt will be interested to know that the writer keeps under glass on his desk the first sheet of this Business Trend which covers the general situation. He also keeps the Barometer of Business. There is no better way of illustrating statistics than the graphics, as one can see at a glance in just which direction the trend is moving. —*Morris Machine Works, Baldwinsville, N. Y., J. L. Lonergan, Purchasing Agent.*

We give very close attention to the charts in the Business Trend Section of THE IRON TRADE REVIEW and appreciate very highly the information therein contained. Your enterprise is very praiseworthy.—*Irving Iron Works Co., Long Island City, N. Y., P. L. Price, Manager.*

We read these charts every week and endeavor to make use of them. Doubtless the Business Trend Section has made your paper more valuable to a number of readers.—*Keokuk Electro-Metals Co., Chicago, John Dillon, Treasurer.*

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

July 26, 1922	July 19, 1922	June, 1922	April, 1922	July, 1921	July, 1913
$37.67	$37.45	$36.96	$34.42	$38.14	$26.34

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record by Months for Nine Years on Page 270

SCRAP PRICES, PAGE 268, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 264

Iron and Steel Prices

Pig Iron

Bessemer, valley	$25.00
Bessemer, Pittsburgh	26.76
Basic, valley	25.00
Basic, Pittsburgh	26.76
Basic, Buffalo	26.00
Basic del., eastern Pa.	25.75 to 26.25
Malleable, valley	25.00 to 27.00
Malleable, Pittsburgh	26.76 to 28.76
Malleable, Chicago	24.00 to 25.00
Malleable, Buffalo, furnace	26.00 to 27.00
Malleable, del., eastern Pa.	27.25 to 28.25

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del. Phila.	30.76 to 31.64
No. 1X, Buffalo	27.50 to 28.00
No. 2 foundry, valley	25.00 to 26.00
No. 2 foundry, Pittsburgh	26.76 to 27.76
No. 2 foundry, Buffalo	26.00 to 27.00
No. 2 foundry, Chicago	24.00 to 25.00
No. 2 foundry, Granite City	25.50 to 26.50
No. 2 foundry, Ironton furnace	25.00
No. 2 foundry, Cleveland del.	24.50
No. 2 foundry, del., Phila.	27.64 to 29.13
No. 2 foundry, N. J. tidewater	28.02 to 29.79
No. 2X, eastern del. Phila.	28.64 to 30.13
No. 2X, east. N. J. tidewater	29.02 to 30.76
No. 2X, eastern del. Boston	29.06 to 30.06
No. 2X, foundry, Buffalo fur.	26.50 to 27.50
No. 2X, Buffalo del. Boston	30.41 to 31.41
No. 2 southern, Birmingham	18.50 to 19.50
No. 2 southern, Cincinnati	22.55 to 23.55
No. 2 southern, Chicago	24.50 to 25.50
No. 2 southern, Philadelphia	24.31 to 25.31
No. 2 southern, Cleveland	24.50 to 25.50
No. 2 southern, Boston	29.11 to 30.11
No. 2 southern, St. Louis	24.17 to 25.17
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia Philadelphia	30.67 to 31.67
No. 2X, Virginia Jersey City	31.04 to 32.04
No. 2X, Virginia Boston	31.42 to 32.42
Gray forge, eastern Pa.	26.00 to 27.50
Gray forge, val. del. Pitts.	25.76
Low phos., standard, valley	33.00 to 34.00
Low phos., standard, Phila.	34.79 to 36.79
Low phos., Lebanon furnace	30.00
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	31.65

Silvery Iron
8 per cent base

Jackson county, O., furnace	32.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	37.29

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 per cent	41.50
11 per cent	44.80
12 per cent	48.10
13 per cent	52.10
14 per cent	57.10

Ferroalloys

Ferromanganese, delivered, Pittsburgh	$72.29 to 79.79
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	67.50 to 75.00
Ferromanganese, 80 per cent, German, c.i.f. Atlantic port	66.00
Spiegel, 19 to 21 per cent furnace spot nominal	35.00 to 36.00
Spiegel, 20 per cent English, c.i.f. Atlantic port	37.75
Ferrosilicon, 50 per cent contract freight allowed	55.00 to 60.00
Ferrotungsten, standard, per pound contained	40.00c to 45.00c
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	11.25c to 12.00c
Imported ferrochrome, 4 to 6 per cent carbon	10.00c to 10.50c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$13.50 to 14.50
Connellsville foundry	14.50 to 15.00
Pocahontas furnace	6.00 to 6.50
Pocahontas foundry	7.00 to 8.00
New River furnace	7.00 to 8.00
New River foundry	10.00 to 11.00
Wise county furnace	7.00 to 7.50
Wise county foundry	9.00 to 10.00
Alabama furnace	4.75 to 5.25
Alabama foundry	5.75 to 6.25

By-Product

Foundry, Newark, N. J., del.	$11.84 to 14.02
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	15.50
Foundry, Granite City, Ill., ovens	9.00

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Open-hearth, Philadelphia	40.17 to 42.17
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00
Forging, Pittsburgh	42.50 to 45.00
Forging, Philadelphia	45.17 to 47.17

SHEET BARS

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00

SLABS

Pittsburgh and Youngstown	$35.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$40.00 to 43.00
Grooved skelp, Pittsburgh	1.70c to 2.00c
Universal skelp, Pittsburgh	1.70c to 2.00c
Sheared skelp, Pittsburgh	1.70c to 2.00c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.60c to 1.80c
Structural shapes, Phila.	2.025c to 2.325c
Structural shapes, New York	2.04c to 2.34c
Structural shapes, Chicago	1.75c to 1.85c
Tank plates, Pittsburgh	1.60c to 1.80c
Tank plates, Philadelphia	2.025c to 2.325c
Tank plates, New York	2.04c to 2.34c
Tank plates, Chicago	1.75c to 1.85c
Bars, soft steel, Pittsburgh	1.60c to 1.80c
Bars, soft steel, Philadelphia	2.025c to 2.225c
Bars, soft steel, New York	2.04c
Bars, soft steel, Chicago	1.75c to 1.85c
Bars, hard steel, Chicago	1.70c
Reinforcing bars, Pittsburgh	1.60c to 1.80c
Bar iron, common, Phila.	1.925c to 2.125c
Bar iron, common, New York	1.94c to 2.14c
Bar iron, common, Chicago	1.80c to 1.85c

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.50c to 2.75c
Bands, Pittsburgh	2.50c to 2.75c
Cotton ties, per bundle Pittsburgh	$1.10
Cold finished steel bars, Pittsburgh base	2.10c to 2.25c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open hearth rails, mill	40.00
Relaying rails, St. Louis	23.00 to 28.00
Relaying rails, Pittsburgh	24.00 to 27.00
Light rails, 25 to 45, mill	1.75c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.25c to 2.35c
Spikes, small and boat	2.50c to 2.60c
Spikes, railroad, Chicago	2.50c to 2.70c
Track bolts, Pittsburgh	3.00c to 3.50c
Track bolts, Chicago	3.50c to 3.70c
Tie plates, Pittsburgh	2.00c to 2.25c
Tie plates, Chicago	1.85c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c to 2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.50c to 2.65c
Barbed wire, galv., Pittsburgh	3.05c to 3.15c
Polished staples, Pittsburgh	2.55c to 2.65c
Galvanized staples, Pittsburgh	3.05c to 3.15c
Coated nails, count keg, Pitts.	1.90c to 2.00c

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.65c to 1.85c
Hot rolled strip steel, Pittsburgh stamping quality	2.50c to 2.75c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.00c to 4.25c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c to 3.40c
No. 28, bessemer, Pittsburgh	3.15c to 3.40c
No. 28, open-hearth, Phila.	3.475c to 3.775c
No. 28, open-hearth, Chicago	3.49c to 3.64c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c
No. 28, open-hearth, Chicago	3.49c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.15c to 4.40c
No. 28, bessemer, Pittsburgh	4.15c to 4.40c
No. 28, open-hearth, Phila.	4.475c to 4.775c
No. 28, open-hearth, Chicago	4.49c to 4.64c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.40c to 2.65c
No. 10, bessemer, Pittsburgh	2.40c to 2.65c
No. 10, open-hearth, Phila.	2.725c to 2.925c
No. 10, open-hearth, Chicago	2.74c to 2.84c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off
Seamless, 3¼ to 4-inch, l. c. l.	48 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	$49.20
Six inch and over, Chicago	45.20
Four-inch, New York	58.30
Six-inch and over, New York	53.30
Four-inch, Birmingham	41.50 to 42.00
Six-inch and over, Birmingham	37.00 to 37.50
Three-inch, Birmingham	50.50 to 51.00

Class A pipe is $4 higher than Class B.

Standard fittings, Birmingham, base, $100.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	July 26, 1922	June 1922	April 1922	July 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh.	$26.76	$26.96	$22.46	$22.96
Basic, valley, del., Pittsburgh....	26.76	26.96	22.21	20.81
No. 2 foundry, del., Pittsburgh..	26.76	25.96	22.31	22.06
No. 2 foundry, Chicago.....	25.00	23.25	20.50	19.35
Lake Superior charcoal, Chicago..	31.65	30.00	26.50	36.85
Malleable, valley	25.00	24.20	20.25	20.40
Malleable, Chicago	25.00	23.25	20.50	19.35
*Southern No. 2, Birmingham....	18.50	18.50	16.00	20.25
*Southern Ohio, No. 2 Ironton..	25.00	23.25	20.30	20.50
Basic eastern del., eastern Pa....	26.00	25.25	21.70	22.25
**No. 2X, Virginia furnace.....	26.00	24.50	22.60	24.50
**No. 2X, eastern del. Phila.....	28.64	27.20	23.60	23.50
Gray forge val. del., Pittsburgh..	25.76	25.96	21.96	20.61
Ferromanganese, del., Pittsburgh	72.29	72.82	69.07	75.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh.	35.00	35.00	31.50	34.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	31.50	34.00
Billets, bessemer, Pittsburgh....	35.00	35.00	30.10	32.25
Billets, open-hearth, Pittsburgh...	35.00	35.00	30.10	32.25
FINISHED MATERIAL—				
Steel bars, Pittsburgh.....	1.70	1.65	1.50	1.85
Steel bars, Chicago.....	1.75	1.75	1.60	2.28
Steel bars, Philadelphia	2.025	2.01	1.91	2.15

*1.75 to 2.25 silicon

	July 26, 1922	June 1922	April 1922	July 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia.....	$2.05	$1.96	$1.86	$2.15
Iron bars, Chicago mill.....	1.80c	1.74	1.63	1.96
Beams, Pittsburgh	1.70	1.65	1.50	1.90
Beams, Philadelphia	2.025	2.01	1.91	2.15
Beams, Chicago	1.75	1.75	1.60	2.33
Tank plates, Pittsburgh.....	1.70	1.65	1.50	1.85
Tank plates, Chicago.....	1.75	1.75	1.63	2.33
Tank plates, Philadelphia	2.025	2.01	1.91	2.15
Sheets, blk., No. 28, Pittsburgh..	3.15	3.15	3.10	3.35
Sheets, blue anl., No. 10, Pitts..	2.40	2.40	2.35	2.55
Sheets, galv., No. 28, Pittsburgh..	4.15	4.15	4.10	4.35
Wire nails, Pittsburgh.....	2.40	2.40	2.40	2.80
COKE—				
Connellsville furnace, ovens.....	13.50	6.60	4.30	2.75
Connellsville foundry, ovens.....	14.50	7.20	4.95	4.45
OLD MATERIAL—				
Heavy melting steel, Pittsburgh..	16.50	17.40	16.35	12.00
Heavy melting steel, eastern, Pa.	15.00	15.30	14.35	11.25
Heavy melting steel, Chicago....	15.50	14.45	13.55	10.55
No. 1 wrought, eastern Pa.....	18.25	17.50	15.85	14.75
No. 1 wrought, Chicago.....	15.50	14.20	13.25	10.25
Rails for rerolling, Chicago.....	16.25	15.40	14.25	12.45

**2.25 to 2.75 silicon

Spot Iron Shows Sharp Advance

Small Supply and General Uncertainty Stimulate Higher Prices—Buffalo Raises to $26 Minimum, Chicago to $25—Sales Made at $28 Delivered Pittsburgh and Cleveland—5000 Tons of Basic Closed at $25

Chicago, July 25.—The leading pig iron producer in this district with six stacks still active has advanced its price to $25, base, on contract and to $26 for spot delivery. This applies to both foundry and malleable grades. The labor troubles are being felt. One producer expects a curtailment of operations unless fuel supplies are improved in the near future. Agricultural implement manufacturers are in the market with new demands for iron. Alabama iron is practically out of the local market. The price of $18.50, Birmingham, or $24.50, delivered, now is low for the Chicago market but delivery is uncertain. A sale of 100 tons of charcoal iron was closed with a steel company making rolls at $28.50, base furnace, or $31.54, delivered. An improved demand in silveries is shown, particularly from automobile manufacturers and agricultural implement interests. Prices are at $32.50, Ohio furnace for 8 per cent, or $37.20, delivered Chicago.

Foreign Offerings Made

Philadelphia, July 25.—Most eastern pig iron makers have withdrawn from the market owing to the fuel situation which is becoming more acute daily. Only one is selling freely, and two others, in a limited way. The market is higher, being $26 to $28, base eastern Pennsylvania furnace, (1.75 to 2.25 silicon) plus $1 for No. 2X (2.25 to 2.75 silicon) while the usual price on No. IX (2.75 to 3.25 silicon) is $30. Due to decreased domestic tonnages foreign offerings are becoming more important comparatively, although they are not large. They comprise several thousand tons of English, Scotch and French foundry iron on hand here or afloat, this being offered at $24, tidewater. The French equivalent of No. 2X iron, except being higher in sulphur, is $25 to $27.50 tidewater, while No. 3 Middlesbrough and No. 3 Scotch iron is offered at $28, tidewater. Sales of foreign iron are not pushed as holders prefer to keep the supply for regular customers.

The Pennsylvania railroad is inquiring for 900 to 1500 tons of foundry iron for fourth quarter. This has not been closed. Several carloads of gray forge iron have been sold at $26 to $27.50, delivered, eastern Pennsylvania. About 1000 tons of copper-bearing low phosphorus iron was sold at $30, furnace within the past few days. New pig iron inquiry is restricted to moderate lots for prompt shipment it is reported.

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Shortage Brings Advances

Pittsburgh, July 25.—The present pig iron shortage is more acute and is bringing about some sharp advances in prices. Several carloads of malleable iron were sold in the week at $27, valley, an increase of $2 per ton and the $25, valley, quotation has become nominal. Because other grades of iron likewise are stronger, it is not possible this week for the Follansbee Bros. Co. to duplicate its purchase of 2000 tons of basic iron at around $24, valley. This means approximately 2500 or 3000 tons yet to be covered by the Follansbee company on its 5000-ton inquiry. Several quotations of $25, valley, and $25, Cleveland, have been made to it on this tonnage.. One producer has refused to

accept basic tonnage as low as $26, valley. No new inquiries for this grade are noted, but the Monongahela Iron & Steel Co. wants 1000 tons of bessemer upon which $25 has been named. That figure has applied on several carloads sold late last week and early this week. The market on foundry iron, particularly the No. 2 grade, has been exceedingly active, several sales being traceable to the cutting off of regular sources of supply because of fuel shortage. Consumers are turning to other producers, like a Cleveland steel company, which is quoting $25 minimum base with a $2.65 freight rate from Pittsburgh common points. This interest has booked something like 15 or 20 orders recently of consumers in Pittsburgh territory, varying in size from 100 to 750 tons. One valley interest has booked several orders at $24.50, valley, although later it revised this figure to $25, valley, and two or three 100 or 200-ton lots have been booked at the latter figure, all contingent upon its operating its furnace. The Westinghouse Electric & Mfg. Co. is understood to have closed upon the inquiry noted last week for Cleveland, Trafford City, Pa., and Springfield plants. Inquiries now current include two or three 500-ton lots together with numerous smaller ones. On some of these southern iron is being offered. The Mesta Machine Co., Pittsburgh, and the H. L. Dixon Co., Carnegie, Pa., want 100 tons of No. 2 foundry and the United Engineering Co. will buy approximately 1500 tons for fourth quarter.

Sellers Out of Market

Boston, July 25.—Representatives of leading eastern Pennsylvania and Buffalo furnaces insist they are entirely out of the market. The effect of the strikes on local melters has been to hold off new commitments. Some foundries have been increasing their output. One Warwick furnace of the Eastern Steel Co., Pottstown, Pa., was banked Thursday and it is understood three Bethlehem furnaces have banked. Few sales were made in the week. Sales of 300 to 400 tons of eastern Pennsylvania iron to jobbing foundries are reported at $27, base, $28 for No. 2X and $30 for No. 1X, indicating wide spread for the higher silicon irons. To this a freight rate of $3.65 a ton must be added. About 100 tons of Buffalo iron in scattered lots has been sold at $26, base, with 50 cent differentials for higher silicon. About 500 tons of charcoal iron was sold at $28.50, furnace, freight rate to Boston being $8.19. Some 50 tons of Scotch iron for August shipment has been sold. The market on this iron is being quoted at $26.25 to $26.75.

Sellers Withdraw From Market

New York, July 25.—As a result of the combined effects of the coal and railroad strikes, the eastern blast furnace industry rapidly is being prostrated. The Replogle Steel Co. because of uncertainty over its coke supply has withdrawn from the market. The Eastern Steel Co., because of lack of coke, has banked its active furnace. Several steel works furnaces in eastern Pennsylvania have been banked. As a result of the combined fuel and railroad situation all Buffalo makers but one have withdrawn from the market. All signs point to a scarcity of pig iron in the eastern section before long. The charter market on ocean transportation has advanced as a result of the active chartering of vessels for carrying coal from England to this country, so that foreign pig iron is not obtainable at the same prices as before. In the meantime, the only respect in which the changing situation is reflected in the market is in an advance in prices. Demand shows no signs of broadening. The General Electric Co. bought 1100 tons of foundry for its Elmira plant. A Jersey City consumer placed 500 tons of high silicon. An Orange N. J., melter is inquiring for 450 tons of foundry for first quarter of 1922. Another melter in this district wants 1000 to 2000 tons of foundry for this year. A Massachusetts interest is seeking 1200 to 2200 tons of foundry, mostly high silicon, for this year. Otherwise current demand continues restricted to small lots about which in most cases there is no particular pressure. This is due to the fact, apparently, that stocks on hand at consumers' plants in most cases still are sufficient to meet current requirements. On eastern Pennsylvania foundry iron the minimum now is $27, furnace, for 1.75 to 2.25 silicon; for 2.25 to 2.75 silicon $28 is minimum, while for 2.75 to 3.25 silicon nothing lower than $30 now is named. On Buffalo foundry the current minimum is $26, furnace, for 1.75 to 2.25 silicon and $26.50 for 2.25 to 2.75, while for 2.75 to 3.25 silicon $28, is asked. At least 1500 tons of prompt Alabama foundry was sold in this district the past week at $18.50, base, Birmingham.

Extended statistics of American iron and steel production, composite market average, and freight rates, page 270

Buffalo Prices Advance

Buffalo, July 25.—The effect of the coal strike in the local pig iron market has been to advance prices and to force the withdrawal from selling of at least one local interest. The Rogers-Brown Iron Co. is out of the market due to the uncertainty of coke supplies. Before retiring, sales of No. 2 foundry were made at $26. Other sellers are naming similar prices. One interest which has not been above $24 base now has raised to $26, base, and malleable to $27. Small tonnages of malleable have been sold at $27 and good tonnages of No. 1X at $28. Instances of $27 for No. 2 plain sales are noted but in only one or two instances. These quotations are all being made on prompt delivery iron. No furnaces have yet been put out of blast but coke supplies are precarious and in most instances, furnaces are assured of only two to three weeks' certain operation.

Market Practically Suspended

Cincinnati, July 25.—A practical suspension of trading activities is apparent in the pig iron market here. Occasionally a melter comes into the market with an urgent order for a car or two, but generally consumers realize the inability of producers to make delivery and are remaining out. The market is completely devoid of inquiries. The B. F. Avery Co, Louisville manufacturers of agricultural implements, has closed for 700 tons of No. 2 foundry, the order going to a southern market at the reported price of $18.50, Birmingham base. A local seller has booked a prompt order for 500 tons of Ohio malleable at $25.50, Ironton base, and another for 550 tons of No. 2 foundry (1.75 to 2.25 silicon). Two smaller tonnage lots of the latter grade were sold at $25, Ironton. An important southern Ohio producer has withdrawn previous quotations and announced a minimum price of $25, Ironton, for the base grade A wide range still is shown in the South although the Sloss-Sheffield Steel & Iron Co. is said to have wiped out its $18 price and is quoting $18.50 on all tonnage offerings. Other furnaces are quoting from $19.50 to $20, Birmingham. The Alabama Co. has notified the trade that its furnaces are sold out up to Oct. 1.

Prices Definitely Higher

Cleveland, July 25.—The cumulative effects of the coal and railroad strikes are translated this week in a much more rapid rate of increase in prices of pig iron. Only one of the northern Ohio group of furnaces remains in the market, and this one has no more iron for sale at $25. The market is now $26, furnace base, representing an advance of $1 over prices a week ago. Inquiry is very active and there has been considerable business to establish the market definitely at higher figures. Several thousand tons were sold in the week at $25, base. Two carloads of No. 2 foundry iron for shipment outside the Cleveland district went at $26.50, furnace, while the highest price done during the week was in the sale of a tonnage for immediate delivery to Pittsburgh at $28, delivered, equivalent to approximately $26.25, valley. A lot of 1000 tons of malleable went at $25, furnace. The seller remaining in the market booked 20,000 tons of iron of all grades during the week. Several carloads of No. 1X iron from southern Ohio has been sold in the Cleveland district at $26, furnace, or $29.02, delivered, equivalent to $25, base, furnace.

A Cleveland furnace booked 5000 tons of basic during the week at $25, furnace, for delivery to an Ohio consumer, this being the first sale of this grade from this district in a number of weeks. The seller has no more basic to offer at this figure. A Cleveland user whose furnaces are down is inquiring for 3000 tons.

No further change is noted in the production department since the Hanna Furnace Co. blew out its Cherry Valley furnace at Leetonia, O., and the McKinney Steel Co. banked one furnace. Little difficulty is being experienced in making shipments due to the shopmen's strike. The strike's influence is confined chiefly to coal shipments from the South. Buyers are trying to stock up. Sellers estimate that fully 50,000 tons of iron is on inquiry.

Some of the current inquiries are: Westinghouse Electric & Mfg. Co., for 700 to 1000 tons of various grades for Cleveland; United States Malleable Iron Co., for 1500 tons of malleable for Toledo, O.; Link-Belt Co., 1500 tons of malleable for Indianapolis, and two

central Ohio melters, one for 350 and the other for 450 tons of No. 2 iron. The Westinghouse inquiry is part of a general inquiry from that company for various plants.

Shipments Monopolize Attention

St. Louis, July 24.—Activity and interest in pig iron centers chiefly in shipments and consumption. Sales and inquiries during the past week or ten days have been insignificant. Most of the important users have about covered their requirements through the third quarter, and are purchasing only small amounts for fill-in purposes. Another contributing cause to the temporary lull is the fact that a majority of furnaces supplying this district are sold up and have little to offer. The price holds strong, with the trend in the South upward. The southern market now is firmly established on a $19 base, instead of $18.50 to $19 as heretofore. Chicago prices continue steady, and the leading local producer's quotation is unchanged at $25.50 to $26.50 f. o. b. Granite City.

The principal single item of interest is the announcement of the freight reduction from Birmingham. The new figure, effective Sept. 1 is $4.22, and sufficiently low to restore southern iron to the position of competitive strength it occupied in the district before the war. For many years the St. Louis district was almost solidly a southern iron proposition, except on basic. The Birmingham-St. Louis rates on pig iron since 1910 are as follows: 1910, $3.375; Oct. 1914, $3.40; June, 1918, $4.50; August, 1920, $5.375; Feb. 1921, $5.735; July, 1922, $5.17; Sept., 1922, $4.22.

Actual sales during the past several days total less than 600 tons, and consist almost exclusively of foundry grades. The only inquiries were 500 tons of foundry from a Des Moines melter for third quarter and 500 tons of gray forge from a northern Illinois point. While no plants have been closed, all are feeling the pinch of fuel scarcity.

Southern Market Is Strong

Birmingham, Ala., July 24.—Furnace interests in the Birmingham district have a very large tonnage of pig iron sold and the situation now has become a matter of production and delivery. The railroad strike is not interfering with furnace operations but reports are heard that consumers are not getting deliveries as they would like them. Southern furnaces are maintaining a $19 to $20 level on No. 2 foundry. While some of the heavy tonnages recently booked went under this range, little now is heard of $18 and $18.50 iron. The high pressure pipe plants have purchased liberally against their needs for the balance of the year. Small lot orders, ranging from 150 to 500 tons still are being taken for delivery during the fourth quarter. Stove foundries of the Middle West have been buying in 100 and 200-ton lots for immediate delivery. Furnace activities of this district show no change this week, but several stacks are preparing to resume. The Sloss-Sheffield Steel & Iron Co. has more than sold its probable make for this month. A steady dwindling of pig iron stocks on furnace yards in this district is shown.

Coke Bid Up to $14.50

Uniontown Traders See Beehive Market Headed for $20 Peak Level of 1920—Buyers Only Filling Present Contracts

COKE PRICES, PAGE 210

Pittsburgh, July 25.—Prices at least $1.50 per ton over last week's level now prevail on what little beehive coke is available. Around $14.50, ovens, now is fairly representative of the market. The furnace grade has sold in the past few days at $13.50 to $14.50, while 72-hour fuel is selling in small lots at $14.50 to $15. High-sulphur coke has been disposed of within the past 24 hours at $13. Prices have been advancing 50 cents every day or two. In the Uniontown district it is said that the market is headed for the peak level of September, 1920, namely $20 per ton. At present, fuel at $14.50 is prohibitively high for many consumers, particularly among foundries. Several of these are paying the price because they have to do so until present contracts are worked out. Formal inquiries are scarce, none at all now being apparent for furnace coke except for small lots for lime burners. Sales are watched closely and often a coke producer will not sell tomorrow's production today, even when the buyer bids a higher figure. Little has been accomplished in increasing coal output by sending troops into the coal and coke region. It is expected that even if the coal mines resume on a large scale so much attention will have to be paid to the shipping of coal to the Northwest that the shortage of coke will continue. Steam coal sold here at $8 and $9 per ton yesterday, and today is standing at that point. Production of coke according to the *Connellsville Courier* for the week ended July 15 was 63,920 tons at compared with 53,920 tons the preceding week.

Two Advances in New England

Boston, July 25.—New England by-product coke dealers are deluged with orders from outside this district. The local foundries appear to be well provided. While coal prices have been advanced sharply receipts have been cut down due to embargoes on southern railroads. The result has been two successive advances in coke in four days. On July 19 contract coke was increased from $13.50 to $14.50, and on July 22 the price was advanced to $15.50. Producers here are not quoting on spot coke. Up to last week spot was about $1 above the contract price. The Everett plants of the New England Coal & Coke have been forced to reduce operations, and unless more coal is received soon further restrictions will be necessary.

Cincinnati Founders Closed

Cincinnati, July 25.—Foundry coke up to $11, ovens, on the Cincinnati market during the week. One transaction involving a considerable tonnage of New River coke is reported at that figure. An order for Wise county fuel was placed at $10. Prices are higher all through the list, previous figures being wiped out by revisions which represent advances ranging from 50 cents to $3 a ton. Prevailing quotations are only nominal as all available tonnage is being taken at practically whatever price is asked. A number of local foundries have exhausted their fuel and have been forced to close. It is estimated that several hundred carloads of coke consigned to users in this district have been caught in the freight congestion. The by-product output up to this time has been well maintained but a slowing down process now is apparent.

Sales At $13, Ovens

Cleveland, July 25.—Some carload sales of Connellsville foundry coke were made in this district the past week at $13, ovens. No other fuel now is available at that figure. For coal, $8 delivered, was paid by one manufacturer for a fair tonnage during the past week.

Shortage Noted at St. Louis

St. Louis, July 24.—The coke situation is becoming extremely difficult, marked symptoms of a shortage appearing. Prices are moving up rapidly. No industrial user has been forced to discontinue operations because of the shortage, but this state of affairs cannot last much longer. The leading East Side by-product producer has advanced the price on foundry coke from $9 to $11, f.o.b. Granite City. Melters in the district are relying almost exclusively on the output of western by-product ovens. Certain coal dealers and speculators are asking very high figures, and where the requirements are urgent are getting them. Western Kentucky coal is held at $7.50. Alabama sales were made at $4 mines.

Coke Orders Numerous

Birmingham, Ala., July 24.—Southern coke producers are being offered as much business as they want, and the market is very strong. Shipments of coke are being made into the Chicago district and elsewhere, while local demands are increasing. Foundry coke is $5.50 to $6. Railroads in the southern territory with few exceptions are handling all furnace coke promptly. The Koppers Co. is rushing work on the addition of 25 by-product ovens to the plant of the Alabama By-Products Co., at Tarrant City, while the Semet-Solvay Co. is planning for steady operation on full time at Ensley.

Quick Sales at High Prices

Philadelphia, July 25.—Foundry coke is $14 to $14.50, Connellsville. All offerings are speedily taken at these figures.

Beehive Coke Off Market

Chicago, July 25—Beehive coke is off the market here. Birmingham by-product coke is offered at $7.50, ovens, equivalent to $11.80, delivered. By-product coke from nearby plants is still $11.25, delivered, but the tonnage is well sold up, and an advance is predicted for Aug. 1. The coke situation generally is becoming more acute.

Bar Makers Avoid Tonnage

Rail and Coal Strikes Add to Congestion at Mills—Users Clamor for Tonnage and Prices Firm Up

BAR PRICES, PAGE 210

Chicago, July 25.—Soft steel bar makers are dodging orders rather than seeking them. Demand is not appreciably changed over that of a week ago but operations are becoming more and more precarious owing to the labor situation. The leading producer is practically out of the market. Prices have been advanced by independent interests in this district and while the Steel corporation still is nominally quoting 1.75c, the market is better represented by at least 1.90c for delivery under 60 days. Sales have been made at 1.95c and predictions are made that 2.00c will be done next week.

Bar iron demand continues strong with sales of one maker reported at 800 tons for the week. Delivery is uncertain and with rapidly rising costs, mills are not anxious for future tonnage. Prices advanced from 1.80c to 1.90c, with some spot sales commanding a premium above this figure.

Hard steel bars rolled from rails still are held at 1.65c to 1.70c, base, Chicago mill, and demand has fallen off so decidedly during the week that the strength shown in other markets is not present here.

Buyers Peddling Tonnages

Pittsburgh, July 25.—Buyers of merchant steel bars are peddling their tonanages in an effort to get steel mills to take them on. This is due to the fuel shortage which has taken them out of the market for the time being, or practically so, making them select obligations with care. The Cambria Steel Co. declined at least two lots in excess of 1000 tons each within the past 48 hours because it could not name a definite delivery. It has been quoting up to 2.00c, but 1.70c to 1.80c, base Pittsburgh, is considered the general market. Such sellers of bars as the Crucible Steel Co. are obtaining considerable business for prompt delivery from their own customers as well as those of other steel companies. The Carnegie Steel Co. on certain sizes cannot make delivery inside of six or eight weeks. Large specifications are being received daily.

Refined iron bars have been advanced $2 per ton, to 2.25c on carload, and 2.40c on less-than-carload quantities. Some improvement in demand is noted. Railroads are buying although some check on this activity has been caused by the railroad strike. This is particularly true of double refined iron. Not much improvement is noted in purchases of low phosphorus melting bars by crucible steel interests. Small orders are being received at the same price as formerly, 4.00c, base Pittsburgh.

Demand is Heavy

Buffalo, July 25.—A remarkable demand for steel bars in small and large lots exists. Inquiries are coming out for material from carload lots up to 200 and 300 tons. The general quotation made by the few mills which will accept tonnage is 1.70c to 1.80c, Pittsburgh. The 1.70c price is the absolute minimum and is being quoted by the Steel corporation. An order for 11,000 tons was placed here at 1.80c, Pittsburgh.

Prompt Shipment Bars Scarce

New York, July 25.—Because of the extent to which the mills are out of the market owing to their large order books and to the way the coal and railroad strikes are interfering with production, it is difficult to place steel bar orders for prompt shipment. While 1.70c base Pittsburgh has not yet entirely disappeared, anything less than 1.80c now is unusual, excepting in connection with special business largely for deferred shipment. One maker has advanced to 1.90c base Pittsburgh. Forging bars have been sold during the past week at 2.05c to 2.15c base Pittsburgh. Sales of spring steel have brought from 2.10c to 2.25c.

Automobile Conditions Mixed

Cleveland, July 25.—Automobile production in this district has dropped off very perceptibly and the effect of this is shown in reduced specifications for steel for the August manufacturing programs of the parts and specialty manufacturers. From Detroit, however, continues to come the report that automobile manufacturers there have scheduled production in August close to the peak level. Much general bar business is being offered to the mills which could add largely to their bookings if they so desired. However the disposition of makers is to put off additional obligations wherever possible and to prevent buyers from unduly collecting stocks which some of the latter have endeavored to do. To carry out this latter plan the position of each consumer as to requirements and receipts of steel is being analyzed Prices are quotable from 1.70c to 1.80c Pittsburgh.

Makers Withdraw From Market

Philadelphia, July 25.—The majority of steel bar makers in this territory have withdrawn from the market due to the fact order books are full. Due to operating uncertainties it is difficult to obtain steel bars under 1.80c, Pittsburgh, and one mill is quoting 1.90c, Pittsburgh. Demand for forging bars is brisk at 2.05c to 2.15c, Pittsburgh. Spring steel is being quoted 2.10c to 2.25c.

Cold-Drawn Operations High

Pittsburgh, July 25.—Schedules of operations among the cold-drawn steel bar mills still are maintained around 75 or 80 per cent. This could be improved were better deliveries from the mills available. Large steel companies have had orders on their books from cold-drawn steel people since March on which only partial deliveries have been made. The minimum of the market is 2.10c, base Pittsburgh, and some orders have been taken this past week at 2.25c where immediate delivery was possible. Individual orders are fairly large, 100 to 500 tons at a time being typical with an occasional order for 1000 tons; these come from the automotive industry direct and indirect and from consumers in other lines.

Demand for Bolts, Nuts and Rivets Strong

NUT AND BOLT PRICES, PAGE 264

Cleveland, July 25.—An advance of approximately $5 a ton on boiler, structural and small rivets, has been announced by the leading maker in this district. While the advance as yet is not general, it is understood other makers are planning to follow. Boiler rivets now are being quoted by this interest at 2.75c, structural at 2.65c and small rivets from 70 to 70 and 5 off, all base Pittsburgh. Demand is steadily increasing, and while the railroad and coal strikes as yet have not seriously affected operations, it is understood makers are having some difficulty in obtaining steel supplies.

Nut and bolt quotations are holding at the quoted levels despite the growing scarcity of steel and the rising prices for the latter. One bolt and nut maker reports it has been unable to develop a price under 2.00c, Pittsburgh, on steel bars in the open market.

Nut-Bolt Orders Numerous

Pittsburgh, July 25.—Both large consumers and jobbers of nuts, bolts and rivets are placing numerous orders. While many are for less-than-carload lots, specifications for a carload or two at a time are becoming more popular. A few tons only of machine bolts are desired by the Mississippi River commission on which bids will be opened today. During the past week or so demand quieted down somewhat, particularly in rivets, on account of the combined coal and railroad strikes. One carload order of rivets was sold on Saturday for export and from time to time similar orders are received from the domestic trade. The discount on small rivets now usually is 70 off although on larger specifications 70 and 5 applies.

Hoop Delivery Uncertain

HOOP PRICES, PAGE 210

Pittsburgh, July 25.—Hoop and band business continues to be placed, the chief difficulty being in connection with deliveries. Large makers are not soliciting further business because they do not wish to commit themselves far ahead on long-time contracts in the present uncertain situation. Orders usually call for a carload or two at a time although occasionally a large consumer will come in for a greater tonnage. The minimum remains at 2.50c.

Otis Steel Co. Planning Large Extensions

Important extensions to the plant of the Otis Steel Co., Cleveland to round out its present capacity are in contemplation according to official announcement. These are to include four 100-ton open-hearth furnaces, a blooming mill, sheet bar mill, a finishing mill and a cold-rolled strip mill. These enlargements will give

the company a capacity of upward of 400,000 tons of finished steel products annually.

To finance the extensions a bond issue of $5,000,000 is being offered and stockholders are to be given the opportunity to subscribe for 330,000 shares of common stock at $11 per share.

Ore Market Is Quiet

ORE PRICES, PAGE 264

Cleveland, July 25.—Blast furnaces which were prospective purchasers of iron ore a few weeks have postponed consideration of such business until the strike situation is cleared up. The market is inactive. The Lake Superior Iron Ore association gives the following data with respect to consumption:

	Total tons
Ore consumed in May	3,293,964
Ore consumed in June	3,440,583
Ore consumed in June, 1921	1,469,645
Ore on hand at furnaces July 1, 1922	18,693,088
Ore on Lake Erie docks July 1, 1922	6,753,991
Total ore on hand at furnaces and Lake Erie docks July 1, 1922	25,447,079
Total for same, July 1, 1921	30,066,465

Corporation's Net Gains in Second Quarter

Report of the United States Steel Corp. for the second quarter ending June 30, 1922, shows net income of $16,219,513 as against $10,975,696 in the first three months of the year. After interest and bond premium and preferred and common dividends, a deficit of $1,462,345 was shown which compares with a deficit of $6,749,470 in the first quarter. Total earnings for the second three months this year were $27,286,945, or an increase of nearly $8,000,000 over the first quarter. The quarterly earnings for the two period this year and the second quarter last year are as follows:

	Second quarter 1922	First quarter 1922	Second quarter 1921
Total earnings	$27,286,945	$19,339,985	$21,892,016
Depreciation and sinking fund	11,067,432	8,364,289	8,666,001
Net income	$16,219,513	$10,975,696	$13,226,015
Int. and bond premiums	5,023,158	5,066,464	5,138,983
Balance for dividends	$11,196,355	$5,909,232	$8,087,032
Preferred dividend	6,304,919	6,304,919	6,304,919
Common dividend	6,353,781	6,353,781	6,353,781
Balance for surplus	*$1,462,345	*$6,749,470	*$4,571,668

*Deficit.

The course of earnings monthly since January this year is as follows:

1922	
June*	$10,712,004
May*	8,824,887
April*	7,750,054
March*	8,505,166
February*	6,180,685
January*	4,656,134

*After excess profits tax.

800 Ovens Placed

It is understood that the Carnegie Steel Co. has placed a contract with the Koppers Co. for approximately 800 by-product coke ovens to increase the capacity of its Clairton plant about 60 per cent. This contract involves an outlay in excess of $12,000,000.

Car Plate Orders Heavy

Increased Demand from Railroads for New Work and Repairs Features Active Market—Prompt Tonnages Scarce

PLATE PRICES, PAGE 210

New York, July 25.—An inquiry for 1000 tons of locomotive plates put out in this district last week is understood to have been closed. Demand for moderate tonnages of plates for prompt shipment continues brisk. Several mills, however, have withdrawn from the market, so that the supply is tightening and the effect is apparent in prices. Some prompt plates were sold in the week at 1.70c, base Pittsburgh, but this figure is exceptional. It is difficult to place tonnage for prompt or nearby shipment less than 1.80c. The New York, New Haven & Hartford railroad has not yet taken action on its inquiry for 1000 to 2000 tons of plates, shapes and bars for car repairs. It is understood the Carnegie Steel Co. will furnish the 4500 tons of plates, shapes and bars for two boats for the Ocean Steamship Co., to be built by the Newport News Shipbuilding & Drydock Co. The 25 80,000-barrel tanks for which the Sinclair Oil interests inquired recently have not been placed. These tanks are for the Mammoth Oil Co. at Casper, Wyo. The Clyde Steamship Co., New York, contemplates taking bids on some new coastwise boats. The Weems-Williams Steamship Co., Baltimore, is obtaining designs for a coastwise combination passenger and freight vessel. The Red D line, which some time ago took bids on two passenger vessels, is expected to revive this inquiry shortly. The McClintic-Marshall Co. has taken the new power plant of the Brooklyn Edison Co., involving, in addition to the structural steel, 1500 tons of plate work.

Repair Tonnage Placed

Cleveland, July 25.—For Baltimore & Ohio car repairs to be done by a car plant in this district, 3000 tons of steel will be supplied by a leading Pittsburg maker. From 750 to 1000 tons of plates will be required for 25 locomotives for the Illinois Central just placed with the Lima Locomotive Works. With deliveries and supplies more uncertain in view of the strike conditions, plate prices show strength. The 1.70c pittsburgh quotation is less apparent in the open market as one of the mills quoting this has withdrawn. Usually prices run 1.80c and upward. An eastern mill has been offering plates at 1.90c Pittsburgh. Other eastern mills have been quoting 1.95c to 2.00c.

Eastern Market Active

Philadelphia, July 25.—Plate demand is active particularly for prompt and nearby tonnages. Prices are stronger due to the fact that certain mills have withdrawn from the market. Only three makers can now furnish car plates for nearby delivery. Plate business was done in the week at 1.70c base Pittsburgh, this being an exceptional price. The usual figure is 1.80c. Numerous lots have been sold up to 2.00c, Pittsburgh. A price of 2.05c eastern mill has been done on a sizable lot. The Pennsylvania railroad has placed an additional 5000 tons of car plates making a total of 12,000 tons closed recently. It is inquiring for 5000 tons more. The Baldwin Locomotive Co. has placed 1400 tons of plates for 35 Baltimore & Ohio locomotives. Demand for universal plates is increasing in connection with structural work. The Cruse-Kemper Co. of Ambler, Pa., has booked a gas holder for Long Branch involving 1500 tons of plates and shapes. The Bartlett Hayward Co. Baltimore, booked a gas holder for the United Gas Improvement Co., involving several thousand tons of plates and shapes. The Norfolk & Western railroad recently placed 3000 tons of plates, shapes and bars for the third quarter.

Mills Refuse To Quote

Philadelphia, July 25.—Structural shape demand is active. Mills in many instances are refusing to quote due to orders on books and uncertainties of the coal and railroad strike situations. The market is 1.70c to 1.80c Pittsburgh, although anything under 1.80c is exceptional. Numerous prompt lots have been sold at 2.00c Pittsburgh.

Heavy Tonnages Are Sought

Chicago, July 25.—So far behind on plate orders are steel mills in this district that new business is avoided wherever possible, yet buying continues heavy and inquiry points to much additional tonnage in the next two weeks. The plate situation is reported by independent interests as uncertain due to the recent heavy bookings and the doubtful character of mill operations. The Steel corporation is still quoting 1.75c, but independent mills are close to 2.00c, with prices above this figure rumored for the near future. The Illinois Central railroad let car orders during the week which will require from 18,000 to 20,000 tons of plates. The Chicago, Burlington & Quincy railroad has not closed on its 3000-ton inquiry of a week ago, but is expected to within the present week. The Illinois Central and the New York Central railroads both have placed contracts for plates for car repairs. A new demand for plates is seen in a revival of inquiry from oil tank manufacturers.

Few Tank Inquiries Out

Pittsburgh, July 25.—Large tankage inquiries are rare in this district, the recent reductions in the crude oil price tending rather to discourage oil storage. A few small inquiries are out for 25, 30 or 35-foot tanks but each of these involves only a moderate tonnage of plates. One or two such awards lately have been noted. The Midland Barge Co. was low bidder on a steel hull for a derrick boat to be purchased by the federal engineers of the Pittsburgh district and a few other barge inquiries are noted involving 200 to 500 tons each of plates. Prices quoted have touched 2.00c, base Pittsburgh, but the usual market levels are 1.70c to 1.80c.

Scrap Shipment Retarded

Railroad and Coal Strikes Curtail Activity in Nearly All Grades—Prices Softer as Result of Quietness in Trade

SCRAP PRICES, PAGE 268

Chicago, July 25.—Recent activity in the scrap market, which is attributed to the scarcity of fuel, is thought to be on an insecure basis, and this belief is strengthened by the fact borings and turnings dropped nearly $1, with the withdrawal by the principal consumer. Scrap is the last commodity to be moved by the railroads and delivery is a decidedly uncertain factor. Dealers with scrap loaded ready to ship are in a position to secure from 50 cents to $1 premium over yard prices. The Chicago Great Western railroad is offering 500 tons but other than this the railroads, while known to have considerable scrap, are too busy with other matters to place it on the market. Cast scrap is in some demand and the price is firm at $18.50.

Quotations Show Firmness

Boston, July 25.—Scrap prices are firmer in this market, although a number of inquiries for borings and turnings which featured a week or two ago have been dropped on account of the strike situation. Cast iron borings, chemical, are firmer as a result of the protracted textile strike in New England. A sale of some 300 tons of axle turnings is the only conspicuous sale reported here, the price being $10. No large inquiries are in sight, a situation attributed to the threatening labor conditions.

Buys Heavy Melting Steel

Philadelphia, July 25.—More interest is shown in steel scrap but mostly for the West. Johnstown, Pa., bought 5000 tons at $17 delivered. Several Pittsburgh mills offered to pay $17.50 delivered but there were no takers at this price. Several eastern mills are feeling out the market. They would pay $15, but nothing is available. The dealers are maintaining a strong attitude. They particularly are averse to selling, due to lack of assurance they can ship.

Quotations Are Nominal

Pittsburgh, July 25.—Prices quoted on scrap mostly are nominal in the face of lack of demand. Consumers are not buying for future needs and most have enough now on hand or on orders for their present requirements. The Trumbull Steel Co. had an embargo against scrap for a time but last week shipments were resumed. The Brier-Hill Steel Co.'s embargo still is in force. Shipments still are being accepted on contracts by large steel companies in or near Pittsburgh although some of the scrap awarded to dealers on recent railroad litsts is not being loaded because of the railroad strike. Sellers are not aggressively seeking business. To sell heavy melting steel today it would be necessary to quote $17 or under whereas to buy, it would be impossible to pick up any tonnage except at a level in advance of the $17 figure.

Only Cast Grades Sold

Buffalo, July 25.—The only important sale of scrap during the past week was about 4000 tons of cast placed at between $18.50 and $19.50. The market is strong for all grades, particularly cast, and because of the shortage of heavy melting steel. Most new buying has been temporarily suspended because of the coal strike though dealers are busy shipping on old orders to mills. Production of scrap has fallen off and dealers who have purchased last month's railroad lists face difficulty in securing delivery because of the strike which prevents the loading of material.

Buy for Future Needs

Cincinnati, July 25.—Cincinnati foundries have been taking considerable scrap tonnage more in anticipation of continued shortage and high prices of pig iron after the strikes are settled than for immediate needs. This has kept some tonnage moving. Practically no scrap has been shipped to this market since the railroad strike started and on the other hand only a little has gone forward to outside consuming points. Heavy tonnage is under demand for steel mills but delivery cannot be made so that the

(Continued on Page 226)

Semifinished Is Clouded

Shipments Now Going Forward as Scheduled, though Shortage Is Becoming Acute—Eastern Mills Withdraw

SEMIFINISHED STEEL PRICES, PAGE 210

Pittsburgh, July 25.—The situation in semifinished steel is becoming more acute. Numerous inquiries for rerolling billets are noted and sizable tonnages could be sold if available. Due to the combined coal and railroad strike influence, however, steel is scarce and large makers like the Cambria Steel Co. are out of the market entirely. The Cambria company is searching the market for free tonnage with which to supply its customers, particularly forging billets. These are quoted at $42.50 to $45, base Pittsburgh, fair sized tonnages being desired by the forge companies in this district. Rerolling billets, 4 x 4-inch, still are quoted nominally at $35, with $2 added for size on the smaller billets. No new inquiries are noted for sheet bars which likewise are held at $35, mill. Most conversion mills are protected on contracts, and while some are holding up their specifications others are furnishing them regularly. When the coal and railroad strikes retard sheet mill operations and sheet bar specifications are held up, a not unwelcome situation is created for the steel mills, which have difficulty in making deliveries because of the coal and railroad labor situation.

Some wire rod business was refused in the past week because of inability to make delivery. One such order involved 225 tons. The interest declining it has been quoting $42 but now is out of the market. Another independent producer here is not soliciting any wire rod business but will supply with a limited tonnage its customers willing to pay $43, Pittsburgh. Only one or two fair sized orders already have been booked at that figure. The American Steel & Wire Co's price still is understood to be $40, so the wire rod market is quoted at $40 to $43.

No inquiries for skelp are noted except an occasional one for export to Canada. As high as 2.00c, base Pittsburgh, recently was quoted on skelp and because the 1.60c level represents contracts booked some time ago the market is quotable at 1.70c to 2.00c, base Pittsburgh.

Mills Stop Selling

New York, July 25.—Prices have become practically of secondary consideration in the market on semifinished material. This is due to the fact that a number of mills which recently have been loath to sell semifinished, due to their own finishing requirements, now are out of the market entirely. Wire rods have been sold in the district at $43, base Pittsburgh, and the price range on wire rods now is $40 to $43. Forging billets continue to be quoted at $40 to $42, base Pittsburgh, but anything lower than $42 rapidly is disappearing. Rerolling billets are quoted at $35 to $37, base Pittsburgh, with a tendency toward the latter figure as the minimum.

Deliveries Uncertain

Youngstown, July 25.—In view of a shortage of steel, which is likely to prevail in the next two weeks unless there is a decided change in the coal situation, the supply of semifinished material, particularly sheet bars, for this quarter's delivery appears uncertain. Shipments now are going forward as scheduled but the outlook for the first part of August is tense. In a few instances sheet bar contracts calling for certain tonnages for immediate delivery have been declined. Billets, slabs and sheet bars are quotablt at $35, Youngstown, although no new business has come out during the past week. Contracts made at the beginning of the quarter are being filled and in doing this, the mills here have all the business they care to handle until the rail and coal strikes are settled.

Good Sales at Cleveland

Cleveland, July 25.—Inquiry for semifinished material this week is very good. The leading maker in this district has booked 12,000 tons additional of sheet bars, slabs and small billets, all at $35,

for delivery in the third quarter. The leading local producer now is operating 7 and 14 open-hearth furnaces or as many as the gas supply will permit.

Eastern Market Strong

Philadelphia, July 25.—The semi-finished market is quiet, but strong. Rerolling billets are $35 to $37; forging billets $40 to $42, and wire rods $40 to $43, Pittsburgh. Little tonnage is obtainable, due to the fact several mills have withdrawn. Others need steel in their own finishing departments.

Warehouse Prices Are Advanced Generally

WAREHOUSE PRICES, PAGE 264

Chicago, July 25.—The heavy demand for steel products from warehouse stock has resulted in price advances in nearly all grades. Steel shapes and plates have been advanced to 2.70c, with steel bars held at 2.60c by some interests and 2.70c by others. No. 10 gage blue annealed sheets have been advanced from 3.63c to 3.75c, but other sheets are stationary. Structural rivets have raised from 3.00c to 3.25c. However, black annealed wire has been reduced from 3.10c to 2.95c by one of the large warehouse interests.

Quotations Are Advanced

New York, July 25.—An advance of $3 a ton on some products has been announced by some jobbers, and the market is fast accepting the new prices. The products affected are steel bars, shapes, plates, hoops, bands and blue annealed sheets.

Demand Is Spotty

Philadelphia, July 25.—Demand for iron and steel materials out of stock is somewhat spotty, but in the aggregate the tonnage moved is unchanged from that of a week ago. The railroad strike to some extent is slowing up shipments. Prices have been advanced approximately $3 a ton on some classifications. Steel bars are now quoted, 2.70c; bands, 3.35c; hoops, 3.75c; shapes and plates, 2.85c; cold-rolled rounds, 3.35c; flats, squares and hexagons, 3.85c.

Prices Are Up

Pittsburgh, July 25.—The Carnegie Steel Co. and the Jones & Laughlin Steel Co. have advanced warehouse prices on bars, plates and shapes $3 per ton, making bars 2.35c, and plates and shapes 2.45c, base Pittsburgh. Bands were advanced from 2.85c to 3.00c, base Pittsburgh. Mill prices for early delivery have been increasing so that the advance in warehouse prices was not unexpected.

Jobbers Advance Quotations

Cleveland, July 25.—Quotations on iron and steel materials out of stock are stronger as the result of continued good demand and the stiffening in mill quotations. Practically all jobbers here now are quoting $3 a ton above the levels of a week ago, steel bars being 2.56c; structural shapes and plates, 2.66c; bands and hoops, 3.50c; cold-rolled rounds, 3.30c and blue annealed sheets, 3.50c. One jobber reports that due to the coal and rail strikes it notices a slight letup in orders.

Sheet Status Gets Tense

Daily Specifications Exceeding Output, New Demand Heavy and Urgent, as Steel Shortage Threatens

SHEET PRICES, PAGE 210

Pittsburgh, July 25.—Daily receipts of sheet specifications continue far in excess of production. This is piling up a tonnage which, if the steel, railroad and fuel situations grow more serious, may have to be carried over into the fourth quarter. Diversified lines of consumption are represented in the list of buyers, users of full finished automobile sheets and galvanized sheets still continuing in the lead. Makers see no prospects of a letup in the demand for automobile sheets for at least two months. A few automobile manufacturers now cannot promise delivery of their cars before the end of September. They are endeavoring to hasten sheet deliveries or trying to increase their tonnages on contract. In point of tonnage, individual orders for all kinds of sheets are fair sized, 500 to 1000 tons at a time being no longer an unusual specification. Because of a combined steel and labor shortage, particularly at its western plants, the American Sheet & Tin Plate Co. is unable this week to operate in excess of 75 per cent of its total hot mill capacity, which is 15 per cent below its recent high rate. This 75 per cent level is slightly above that of last week when some skilled hot mill workmen laid off. Independent operations are estimated to average between 75 and 80 per cent. Market prices on sheets continue to show variance, the American Sheet & Tin Plate Co.'s prices being 2.40c, 3.15c, 4.15c and 4.50c, base Pittsburgh, on blue annealed, black, galvanized and full-finished autmobile sheets, respectively. One or two independents have the same levels or name them on occasion in competitive business. Usually, however, independent mill figures are $3 to $5 per ton higher.

Future Operations Uncertain

Youngstown, July 25.—While the coal situation has not delayed the shipment of sheets or interfered with the operation of mills, there is considerable uncertainty respecting operations in the next four to six weeks. It is likely that higher prices will prevail. A shortage of steel is beginning to assert itself, and while the situation is not tense the next four weeks will tell whether steady sheet mill operation can be maintained and shipments made according to schedule. Stocks in the country are low at manufacturers' plants and mills. Few consumers stocked up in the early part of the year, assuming that prices would be lower. On the other hand, mills have not been rolling against stocks in view of the good demand for the various grades of common sheets, and because of the $35 sheet bar price.

In view of depleted stocks and the possibility of a shortage of steel, coal and cars it is questionable whether present prices will govern fourth quarter business. The demand for black and galvanized sheets this week still is strong. Makers expect the fourth quarter business will be as broad and as active as at present. In the absence of demand from eastern consumers mills are centering their interest on those in the Chicago and Detroit districts. Most mills here are booked well into August and hesitate to assume additional obligations until general conditions show some change. Some mills in the valley are booked further ahead. One maker has withdrawn from the market entirely. Tonnages of black at 3.15c and galvanized at 4.15c base, Pittsburgh, are becoming scarce. The volume of business at 3.30c and 4.30c for black and galvanized, respectively, is growing. Indications point to the placing of a large amount of fine-finished sheets for next quarter.

Sheet Scarcity Increases

Chicago, July 25.—Sheets for third quarter delivery have become scarcer. It is difficult to find any mill willing to book tonnage for delivery prior to Oct. 1. Prices are decidedly firm, with premiums asked wherever promise of delivery can be made. Chicago prices are 2.84c for blue annealed, 3.64c for black and 4.64c for galvanized.

Higher Prices More Frequent

Philadelphia, July 25.—Sheet demand is good and higher prices are more frequent. Current business is sufficient to take the output of the mills. Some sizes are scarce. The market is 2.40c to 2.60c, base Pittsburgh, on blue annealed; 3.15c to 3.40c on black and 4.15c to 4.40c on galvanized.

Strip Tonnage Is Good

STRIP PRICES, PAGE 210

Pittsburgh, July 25.—Specifications for strip steel continue to be received in good volume, both hot and cold-rolled. Because of the fuel situation makers are endeavoring to steer clear of heavy commitments, particularly on hot-rolled, but find they are well committed on both grades for the third quarter. No fourth quarter business as yet has been booked. Buyers which a few months ago were ordering 25 to 50 tons, now are ordering 100 to 500 tons at a time and occasionally a specification for 1000 tons is seen. These are coming from other consuming lines than the automobile and automobile parts industries, household hardware, adding machine and typewriter companies contributing a fair share. Caused by the railroad strike, the latest difficulty encountered by strip steel producers is a shortage of good order box cars. A labor shortage also is beginning to be noticed and this likewise promises to grow more serious. Average operations, however, are maintained at about 85 per cent. The full spread of the market on cold-rolled is 4.00c to 4.25c, and on hot-rolled 2.50c to 2.75c, base Pittsburgh, although the maximum prices usually represent premiums paid for prompt deliveries.

Shapes Continue Active

Week's Awards Aggregate 27,507 Tons—Strikes Affect Deliveries but Builders Place Tonnages Regardless—Prices Still Firm

STRUCTURAL SHAPE PRICES, PAGE 210

New York, July 25.—Approximately 10,500 tons of steel has been awarded by the Brooklyn Edison Co., for a new power unit, and a similar project, involving several thousand tons, is likely to be brought out shortly by the New York Edison Co. Generally, the local structural market is a trifle slower. New inquiry is limited and orders, for the most part, are small and scattered. A leading independent fabricator recently complied figures showing that during the first half of this year buildings were awarded in the metropolitan district aggregating 197,000 tons. This compares with a normal tonnage for a similar period of 120,000 tons, an increase of 77,000 tons or about 64 per cent, instead of a total of 179,000 tons or a gain of 49 per cent, reported last week. Fabricated prices, while tending upward, continue about the same. Shapes are also unchanged at about 1.75c, Pittsburgh.

Orders Again Increase

Chicago, July 25.—Structural contracts during the week have been sufficiently heavy to return the market to the active state which prevailed earlier in the month. The McClintic-Marshall Co., secured 1900 tons for a bridge over the Arkansas river at Redlands, Okla., and the American Bridge Co., closed for 1215 tons for a 13-story building in Chicago. Other awards bring the total reported in this district close to 8000 tons. Inquiry, as yet of a confidental nature, is said to indicate the continuance of awards at approximately the same rate established in the past week. Delivery from mill is much deferred and prompt delivery can be secured only through warehouses or fabricators. The plain material price remains at 1.75c to 1.85c Chicago mill.

Awards Are Small

Pittsburgh, July 25.—Awards of structural shapes with few exceptions continue to involve relatively small tonnages. Each fabricator in the district reports receipt of three or four jobs involving under 100 tons. The largest job awarded recently was a new factory building in Detroit for the Ford Motor Co., involving 1700 tons. Trestle work at Homestead, Pa., for the Pittsburgh & Lake Erie railroad on which the McClintic-Marshall Co. is reported to be low bidder, also requires 1700 tons. Structural shapes have been quoted at as high as 2.00c, but 1.70c to 1.80c, base Pittsburgh, still is considered representative of the general market. The Cambria Steel Co. is entirely out of the market as regards new business but continues to ship on old contracts. Considerable figuring is going on and a number of projects involving 100 to 2000 tons each are up.

June Shape Awards Fewer

Washington, July 25.—Estimated June bookings of structural shapes by the fabricating shops of the country amounted to 119,000 tons and not 158,700 tons as reported in THE IRON TRADE REVIEW last week. The error, due to misinterpretation of a telegraphic dispatch, showed June awards gaining on May by 11,800 tons. Instead, June showed an actual loss of 27,900 tons. The June figure is based on reports received by the bureau of census, Washington, from fabricators representing 75 per cent of the country's farbricating capacity.

Small Awards Active

Boston, July 25.—More activity is reported in structural steel in this locality, although much of the business is small. Local fabricators report they can close business faster than they can produce it. The railroad strike has had a tendency to accelerate this business. One Maine railroad is understood to have closed contracts for some 250 tons for car repairs.

The Portland, Me., pier project, calling for between 900 and 1000 tons has not yet been closed although bids were received last week. An inquiry is in the market for 133 tons for a bridge at Stinchfield, Me. A local fabricator has closed a contract for 150 tons for an ice house at Roxbury, Mass. Rumors of an advance in mill prices have been heard but are unverified. Warehouse prices have been marked up to 3.04c from 2.85c.

Prices Range 1.70c to 1.90c

Buffalo, July 25.—The prevailing price for shapes is about 1.85c to 1.90c, Pittsburgh. The Bethlehem Steel Co. is understood to be quoting 2.00c. The minimum price is 1.70c. The latter price is quoted on material for which no certain delivery is promised. Delivery on the higher prices is from one to two months.

CONTRACTS PLACED

Awards reported this week..... 27,507 tons
Awards reported last week..... 24,712 tons
Awards reported two weeks ago.... 21,555 tons

10,500 tons, power plant for Brooklyn Edison Co., Brooklyn, to McClintic-Marshall Co.

1900 tons, bridge over Arkansas river, Redlands, Okla., to McClintic-Marshall Co.

1700 tons, new building f.r Ford Motor Co., Detroit, to McClintic-Marshall Co.

1650 tons, bridge over Burrard inlet near Vancouver, Wash., for Burrard Terminal & Bridge Co., to McClintic-Marshall Co., previously reported but tonnage not stated.

1215 tons, 13-story building, Chicago, to American Bridge Co.

1200 tons, Shaff building, Philadelphia, to McClintic-Marshall Co.

1000 tons, Gerrard bridge, Montreal, to Canadian General Electric Co.

700 tons, dam 34, Ohio river, to Independent Bridge Co.

600 tons, dam 32 at Vanceburg, Ky., Ohio river, to Dravo Contracting Co.

600 to 650 tons, buildings for Nash Motors, Inc., Bay View, Milwaukee, to Fort Pitt Bridge Works; 200 tons included in this previously reported as awarded to Worden-Allen Co.

552 tons for gas container for city of Birmingham, Mass., to the Stacey Mfg. Co.

500 tons, Locust street office building, Philadelphia, to American Bridge Co.

410 tons, radio towers at Mare island navy yard, to Donnell Zane Co.

400 tons, hospital, Philadelphia, to an independent.

400 tons, Third Church of Christ, New York, to American Bridge Co.

400 tons, office building, Philadelphia, William Steele & Sons Co. to furnish steel.

400 tons, high school, Price Hill, Cincinnati, for Catholic board of education, to L. Schrieber & Son Co.

400 tons, Academy of the Sacred Heart, Philadelphia, to an independent.

385 tons, Traylor building, Philadelphia, to McClintic-Marshall Co.

320 tons, high school, Danville, Ill., to Central States Bridge Co.

300 tons, manufacturing plant, at Manchester, N. H., to Lyons Iron Works.

300 tons, bridge work for Virginian railroad, to Virginia Bridge & Iron Co.

300 tons, plant addition for lime company, Woodville, O., to American Bridge Co.

250 tons, addition to bank building for Provident Bank & Trust Co., Cincinnati, to McClintic-Marshall Co.

200 tons, addition to the State hospital, Trenton, N. J., to American Bridge Co.

200 tons, addition for Gerstner Boiler Works, Pittsburgh, to Memphis Steel Construction Co.

150 tons, ice house for Boston Ice Co. at Roxbury, Mass., to a Boston fabricator.

150 tons, General Electric building, Oakland, Cal., to California Steel Co.

150 tons, school for blind, Reading, O., for St. Rita Catholic society, to L. Schrieber & Son Co.

125 tons, business block for Zingen & Braun, at Sixth and Sycamore streets, Milwaukee, to Milwaukee Structural Steel Co.

100 tons, runway for Westinghouse Electric & Mfg. Co., Trafford City, Pa., to the Memphis Steel Construction Co.

100 tons, school at Dunloe, Pa., near Johnstown, Pa., to Memphis Steel Construction Co.

100 tons, St. Theresa church, Price Hill, Cincinnati, to L. Schrieber & Son Co.

CONTRACTS PENDING

2000 tons, new building at Warren, O., for Youngstown Steel Co., Youngstown, O., bids being taken.

1800 tons, bascule bridge, Seattle, Wash., bids being taken.

1600 tons, trestle work, Homestead, Pa., for Pittsburgh & Lake Erie railroad, McClintic-Marshall Co., low bidder.

1200 tons, additions to plant, Pullman Co., Pullman, Ill., bids being taken.

1100 tons, City club, Baltimore; project indefinitely withdrawn.

1000 tons, Young Men's Hebrew association, Newark, revived.

1000 tons, United Lutheran building, Philadelphia, bids being taken.

1000 tons, Reformed church building, Philadelphia, bids asked.

1000 tons, warehouse for Revillon Freres, New York, postponed until fall.

900 to 1000 tons, state pier at Portland, Me., Post & McCord low on general contract for section A and Jobson & Gifford for section B.

600 tons, shops for Louisiana & Arkansas railway, Stamps, Ark., bids being taken.

600 tons, law building, Norfolk, Va., bids asked.

600 tons, new building at Trafford City, Pa., for Westinghouse Electric & Mfg. Co., action deferred.

500 tons, additional substation, New York Edison Co., New York, specifications to be issued soon.

500 tons, addition to American League baseball park, Detroit, revived after a year.

500 tons, temple for Tifereth Israel congregation, Cleveland, bids to Aug. 14.

450 tons, courthouse for Summit county, Akron, O., bids rejected; to be readvertised.

450 tons, Riverside pumping plant for Milwaukee municipal waterworks system; bids being taken until July 27 by R. E. Stoelting, commissioner of public works.

400 tons, building for Street & Smith, Seventh avenue and Fifteenth street, New York, bids being taken.

250 tons, apartment, Hyde and Greenwich streets, San Francisco, bids to Aug. 24.

250 tons, for transmission towers for Turlock Irrigation Co., San Francisco, bids to Aug. 8.

200 tons, loft building, Hudson and Greenwich avenues, New York, bids asked.

150 tons, building for Plumbers Trade Journal, West Thirtieth street, New York, bids being taken.

133 tons, bridge, Stinchfield, Me., bids being taken.

Tonnage not stated, Masonic temple, Walnut Hills, Cincinnati, for lodge No. 483 F. & A. M., bids being taken.

Tonnage not stated, addition to Jewish hospital, Avondale, Cincinnati, general contract to Ohio Building & Construction Co.

Tin Plate Demand

Exceeds Expectations As Canmakers Begin to Specify

TIN PLATE PRICES, PAGE 210

Pittsburgh, July 25.—The expected scramble for tin plate is in evidence. The California fruit and vegetable crop

exceeds all expectations and one large can interest alone which up to two weeks ago had twice revised its original estimate of can requirements, now believes it will be 60,000,000 cans short. Already it is understood to be 55,000 cans short of requirements for the Northwest berry crop. This tin plate consumer as well as numerous others, are offering large tonnages to the mills, and during the last two weeks orders aggregating approximately 1,000,000 base boxes have been offered to producers. A great deal of this, because of the mill's sold-up condition, it was necessary to reject, par-90 days was required. The pea crop is taking more tin plate than originally was scheduled; acreage in tomatoes promises a huge yield, and all signs point to one of the largest corn packs in history. One order for tin plate turned down here recently involved 75,000 base boxes. Other orders involving an aggregate of 45,000 or 50,000 base boxes for August and early September delivery likewise had to be refused. The American Sheet & Tin Plate Co. only is operating 75 per cent of its total hot mill capacity due to a combined shortage of steel, workmen and good order box cars. This has been its average in tin plate mill operation for some time when sheet mill operation was at 90 per cent, so that both sheet and tin mill production has been reduced somewhat.

Wire Demand

Indicates Consumers Anticipate Strike Complications—Prices Firm

WIRE PRICES, PAGE 210

Cleveland, July 25.—A surprisingly good volume of wire business for this period is continuing. Nails, particularly cement coated, are in active demand. Specifications from the automobile industry are in lighter volume reflecting the decline of production at this season. Shortage of hot mill workmen continues to hamper production but few effects of the coal strike are apparent.

Western Demand Improves

Chicago, July 25.—A decided improvement in orders indicates outlying dealers are anticipating further strike complications. Western salesmen report inquiry heavy for this time of the year. Prices, however, are unchanged at 2.40c for nails and 2.25c for wire. The American Steel & Wire Co. is quoting on delivery for from four to six weeks.

Demand Continues Heavy

Pittsburgh, July 25.—Demand continues heavy for wire and wire products although in the case of one Mahoning valley producer a falling off in nail business has been witnessed. Most of its regular customers probably are being supplied on contracts. A large local producer notes orders and specifications as numerous and as heavy as it desires in view of the uncertainty surrounding the fuel supply. It states orders for nails, wire, etc., are well balanced. One eastern Pennsylvania producer which claims to have maintained a 2.50c, base Pittsburgh price right along on nails and which has booked some business on that basis, now is out of the market and is confining its attention to shipments on contracts. Other producers with the American Steel & Wire Co. are naming 2.40c on nails. All makers are quoting plain wire uniformly at 2.25c, base Pittsburgh.

Forces Railroad Buying

Strike of Shopmen Results in Heavy Placement of Car Repairs—New Equipment Orders Also Placed—Track Material Moving

RAILROAD TRACK MATERIAL PRICES, PAGE 210

New York, July 25.—More than 3000 freight cars have been awarded in the East, including 1000 gondolas for the Philadelphia & Reading, and 1000 hoppers for the Pittsburgh & West Virginia. At the same time, considerable repair work has been let, including 6000 freight cars for the Baltimore & Ohio and 1000 for the New York Central. It is also reported the Missouri Pacific has closed on repairs to 2500 cars. New inquiry involves close to 2000 freight cars. Outstanding in the locomotive market is the award of 65 for the Illinois Central, 25 going to the Lima Locomotive Works, 25 to the American Locomotive Co., and 15 to the Baldwin Locomotive Works. Another sizable award, calling for 30 for the Delaware, Lackawanna & Western, has been made to the American company. Six locomotives for the Southern have been placed with Baldwin. The Lehigh Valley has contracted for the repair of 15 locomotives with the American company and 15 with Baldwin. New inquiry calls for 15 for the Baltimore & Ohio and 30 for the Canadian Pacific. The Erie has placed an order for 8000 kegs of track bolts. The New York, New Haven & Hartford is inquiring for 1250 kegs of track spikes.

Car Orders Continue

Chicago, July 24.—With the growing seriousness of the strike, railroads continue to place freely orders for new cars and for car repairs and inquiries show a large additional amount of business is ready to be closed soon. The Illinois Central let contracts for 3000 gondolas to several builders and placed contracts for the repair of 600 steel cars The 3000-ton inquiry for plates from the Chicago, Burlington & Quincy has not been closed but is expected within the week. The steel rail market temporarily is quiet, mills not being anxious for additional tonnage and the roads having current needs satisfied. Track fastenings are in fair demand, although individual orders are small. Bolts are firm at 3.70c, Chicago, and spikes at 2.70c. The Union Refrigerator Transit Co. is inquiring for 350 cars.

Price Advances Expected

Pittsburgh, July 25.—While it is expected that light rails soon will advance to 2.00c, base Pittsburgh, the highest price named here so far is 1.75c, which continues to represent the market. Rerolling mills are quoting as low as 1.60c, although often they, too, secure 1.75c, the price named by the makers from billets. Inquiries for single carloads are fairly numerous. Orders recently have involved only single carloads, although one large buyer has placed an order with a steel company for five carloads. Track bolts still are quoted over a wide range from 3.00c to 3.50c, base Pittsburgh. Only a few small inquiries are noted. Among the inquiries out for spikes is one from the Southern Pacific for 2500 kegs and one from the Erie railroad for 5000 kegs.

CAR ORDERS PLACED

Pittsburgh & West Virginia, 1000 hopper, to Cambria Steel Co.

Philadelphia & Reading, 500 gondolas to Pressed Steel Car Co., and 500 to Standard Steel Car Co.; 10 baggage and mail cars to American Car & Foundry Co.

New York Central, repairs to 1000 cars, 500 each to Ryan Car Co., and Buffalo Steel Car Co.

Baltimore & Ohio, repairs to 6000 freight cars, as follows: 1000 coke to Baltimore Car & Foundry Co.; 1000 box to American Car & Foundry Co.; 1000 gondolas to Pullman Co.; 1000 box to Pressed Steel Car Co.; 500 box to Hamilton Car Co.; 500 hoppers to Youngstown Steel Car Co.; 500 box to Illinois Car & Mfg. Co.; and 500 gondolas to General American Car Co.

Missouri Pacific, repairs to 2500 freight cars, as follows: 1250 to American Car & Foundry Co.; 1000 to Sheffield Car & Equipment Co.; and 250 to Mount Vernon Car Mfg. Co.,

Illinois Central, 3600 repairs: 500 to Pullman Co., 1000 gondolas to Pressed Steel Car Co., 500 to Mt. Vernon Car Mfg. Co., 500 to American Car & Foundry Co., 500 to Bettendorf Co., 600 gondola to Ryan Car Co.

Chicago, Burlington & Quincy, 500 box car repairs, to Streator Car Mfg. Co.

White Coal Co., 50 mine cars, to Pressed Steel Car Co.

CAR ORDERS PENDING

Canadian Pacific, 250 to 500 refrigerator, bids asked.

Chicago, Indianapolis & Louisville, 300 gondola, bids asked.

Chicago, Milwaukee & St. Paul, 1200 wooden gondolas, bids asked.

Winston-Salem Southbound, nine miscellaneous coaches, bids asked.

Brooklyn Rapid Transit Co., 50 subway cars, bids asked.

Cleveland Railway Co., 100 passenger, contemplated.

Chicago, Burlington & Quincy, 500 gondola repairs, bids taken.

Pere Marquette, 1000 box car repairs, bids asked.

Mill Contracts Placed

Work of clearing the debris from the site of Gary, Ind., upon which the new tube mill plant of the National Tube Co. will be erected, is about completed. The contract embracing the construction of foundations, piers and buildings, will be executed by Mellon-Stuart-Nelson Construction Co., Pittsburgh, and work in this direction will be started within the next two weeks. The new plant will include five lap and five buttweld tube mills.

Resigns as President

S. G. Gilfillan president of the Belfont Iron Works Co., Ironton, O., resigned at a recent meeting of the board of directors and was made chairman of the board. Mr. Gilfillan is one of the notable figures of the Hanging Rock iron district. He entered the works of the Belfont company in a lowly position when charcoal was beginning to be supplanted by coke in the blast furnace. He became clerk, bookkeeper and then vice president, which position he held for years until elected president. Coles Peebles, for many years managing head of the Ashland Steel Co., Ashland, Ky., which was recently taken over by the American Rolling Mill Co., has been elected to succeed Mr. Gilfillan as president of the company.

Concrete Bar Lots Pending

Actual Orders Placed Are Small However—Strikes Have Disquieting Effect—Mills Active but Hesitate To Take on New Business

REINFORCING BAR PRICES, PAGE 210

Chicago, July 25.—With small jobs still the rule, concrete bar sales during the week have shown an improved total tonnage, and most interests report better inquiry and better feeling in the trade. Illinois has awarded most of its contemplated road work and bar contracts aggregating nearly 1000 tons have been placed. The Paul J. Kalman Co. received 500 tons of this award and also a part of the award for road work in Michigan. Despite the handicap which the strike causes in railroad construction work, several roads have placed orders luring the week, the Santa Fe with a contract for 300 tons and the Chicago, Rock Island & Pacific for 100 tons, both for miscellaneous shop improvements. Prices are firmer, with the minimum mill price, on anything below 300 or 400 tons, 1.90c. The Chicago warehouse price continues at 2.38c.

Strike Fear a Factor

New York, July 25.—The seasonal shrinkage in the demand for concrete bars is being assisted by the fears that the railroad strike will prevent deliveries. As a result, business of the past week has been small in volume. Prices continue to harden and it is difficult to do under 1.75c base Pittsburgh. In fact, quotations below 1.80c base Pittsburgh, are unusual. These quotations apply to mill shipment, which now means delivery in six to eight weeks. On concrete bars for warehouse shipment, the price continues 2.25c, base Pittsburgh.

Have Disquieting Effect

Cleveland, July 25.—The demand for concrete reinforcing bars appears to be continuing without letup but difficulties of delivery are beginning to be felt and are having a disquieting effect upon the market. Bids are to be closed July 31 on 540 tons for the Conneaut bridge, inquiry for which appeared sometime ago. Rail steel bars are quoted at 1.80c, mills, for small sizes which are scarce and 1.70c, mill, for large.

Orders Are Limited

Pittsburgh, July 25.—Perhaps 150 or 200 tons of reinforcing concrete bars are being sold weekly in the Pittsburgh district or about 50 per cent of normal, it is estimated. This tonnage is made up of small amounts, the usual order involving 10 to 50 tons. Both mill and warehouse shipments are considerably deferred. The price range has widened, as high as 2.00c now being quoted and 2.25c out of warehouse stocks. Several attractive jobs now are up for consideration involving up to 150 tons, on which 1.80c or 1.90c base Pittsburgh are the usual prices figured for the raw material.

CONTRACTS PLACED

Awards reported this week	5,350 tons
Awards reported last week	5,144 tons
Awards reported two weeks ago	4,370 tons

270 tons, West Seventy-third street bridge, Cleveland, to Franklin Steel Works.
750 tons, California State Life Insurance building, Sacramento, Cal., to Columbia Steel Co.
100 tons, Wickwire Spencer building, San Francisco, to Gunn, Calle & Co.
100 tons, apartment house, Taylor and Bush streets, San Francisco, to Gunn, Calle & Co.
200 tons, apartment house, Sacramento and Powell streets, San Francisco, to Badt-Falk Co.
100 tons, bridge over Snake river at Central Ferry, Wash., to Penn Bridge Co.
650 tons, Thirty-ninth street sewer, Chicago, to Concrete Steel Co., Chicago.
500 tons, for road work, state of Illinois, to Paul J. Kalman Co.
500 tons, road work, state of Illinois, in two lots to two unannounced companies.
300 tons, Santa Fe railroad for shop construction, to Paul J. Kalman Co.
100 tons, Chicago, Rock Island & Pacific railroad, for shop construction, to Paul J. Kalman Co.
100 tons, addition for McAdams Mfg. Co., to Truscon Steel Co., general contract to Bowie & Lydon Co.
100 tons, warehouse for Tuckerman & Forrester Co., Chicago, to Truscon Steel Co., general contract to Union Insulating & Construction Co.
1000 tons, building for Standard Milling Co., Jersey City, N. J., to Hartmann, Duncan & Rogow, Inc.
150 tons, R. H. Macy & Co. building, New York, to Hartmann, Duncan & Rogow Inc.
100 tons, sewage disposal plant, Mamaroneck, N. Y., to Hartmann, Duncan & Rogow, Inc.
130 tons, highway work, Huron county, O., to Concrete Steel Co.
200 tons, building for Louisville Gas & Electric Co., Louisville, Ky., to Concrete Steel Co.

CONTRACTS PENDING

3500 tons, Buffalo sewage disposal plant, general contract to Thompson-Starrett Co.
125 tons, Law home, Little Sisters of the Poor, Pittsburgh, bids being taken.
150 tons, sales room for Buick Motor Co., Pittsburgh, bids being taken.
100 tons, office building, Diamond street and Cherry alley, Pittsburgh, bids being taken.
300 tons, round house for Pennsylvania railroad, Pitcairn, Pa., bids being taken.
135 tons, concrete work for Pennsylvania railroad, Pittsburgh, bids being taken.
150 tons, building for the Harbison-Walker Refractories Co., general contract awarded Pihl & Miller Co., Wabash building, Pittsburgh.
175 tons, Tribune building, Oakland, Cal., bids in.
870 tons, bids on general contract for filtration plant at Sacramento, Cal., to be reopened.
200 tons, school, Redwood, Cal., bids rejected, to be readvertised.
200 tons, Physicians building, Oakland, Cal., bids being taken.
250 tons, hotel, Sutter & Taylor streets, San Francisco, bids being taken.
100 tons, foundations for Fairmount pumping plant, Cleveland, Hunkin-Conkey Construction Co. low bidder.
Tonnage not stated, factory, laboratory and warehouse buildings, Pfeffer road, Cincinnati, for Southern Agricultural Chemical Co., general contract to Ferro-Concrete Construction Co.
Tonnage not stated, addition to manufacturing plant for Littleford Bros., East Pearl street, Cincinnati, general contract to Ferro-Concrete Construction Co.
Tonnage not stated, monastary for Holy Name society, Woodburn avenue and Locust street, Cincinnati, Crowe & Schulte, architects.

Pipe Orders

Reflect Crude Oil Reductions—Cast Buying Quiet—Operations Full

PIPE PRICES, PAGE 210 AND 264

Pittsburgh, July 25.—Recent reductions in crude oil prices were immediately reflected in the pipe market in holding up orders for oil country goods, casing, etc. A few cancellations are noted although some only are for a part of the original order. Orders for single carloads or two of black or galvanized standard merchant pipe from supply companies all over the country continue to come out and are growing in number. Some distributors would like to receive 10 or 12 carloads a month on orders placed in this way. Because bessemer steel is so scarce, however, the pipe that is produced is being "spread thin" in order to keep as many customers satisfied as possible. The feature of the line pipe market is the inquiry from Booth & Flinn, Ltd., for 57 miles of 4-inch pipe, understood to be for shipment west. This involves approximately 1650 or 1700 tons and the order probably will be placed tomorrow. A number of other line pipe projects are awaiting financial arrangements.

Large Tonnages Absent

New York, July 25.—While demand for cast iron pipe continues strong, it is devoid of large tonnages and at the moment little municipal activity is noted. Prices are strong but unchanged. The rail and coal strikes have had little direct effect on plants in this district.

Prices Incline Upward

Chicago, July 25.—Cast iron pipe awards, although individually small, continue to show a favorable aggregate tonnage. Prices are firm with increases predicted almost any day. Six-inch pipe on small orders is offered at $47, delivered Chicago, but favorable tonnages are still able to command $46. Work which is being planned indicates exceptionally heavy awards during the fall and winter. Omaha has plans calling for a round tonnage of 48-inch pipe. Kansas City, Louisville, and St. Louis all have large construction programs under way. Walbridge, O., is asking bids on 150 tons of 4 to 8-inch pipe. Freight rates on cast iron pipe from Birmingham to points on the Ohio river and to St. Louis will be reduced as soon as possible by the southern roads. The new rates will be as follows: To Cincinnati, $4.45, to Louisville, $4.12; to Evansville, $4.45; to St. Louis, $5.58. These rates do not affect the through rates to Chicago.

Production Steady in South

Birmingham, Ala., July 24.—Cast iron pipe production is steady but delays in deliveries are reported due to the railroad strike. Labor is a little more plentiful. A few scattering lettings are reported. Attention now is directed to making and shipping pipe.

Ferro Sales

Reach 2500 Tons in Week—Spiegel Bookings Also Heavy

FERROALLOY PRICES, PAGE 210

New York, July 25.—Ferromanganese sales of the past week totaled at least 2500 tons. Because the prompt supply has been well sold up, sales of spot and nearby are bringing substantial premiums. Sales of spot metal have been made at $72.50 to $75 tidewater. July shipment from

England brought $70 and $72 tidewater. Sales of August shipment from England have been made at $67.50 and $70 and the minimum asking price on August shipment now seems to be $70. A considerable portion of the business of the past week has involved shipment from England in September and later at $67.50. Sales of German ferromanganese for nearby shipment from Germany have been made during the past few days at $66, c. i. f. Baltimore, but this price is expected to be advanced shortly. Several inquiries now pending aggregate a fair tonnage. Sales of about 1500 tons of spiegeleisen were made during the past week at $35 to $36 furnace for 20 per cent. Owing to the coke situation and heavy sales, the domestic maker of spiegeleisen now is out of the market. English spiegeleisen continues to be held at $37.75 tidewater for 20 per cent metal but no sales have been made.

Buying of tungsten metal, ferrotungsten and ferrovanadium has shown improvement, this trade now getting into production after fully 18 months of slackness, due to former accumulated stocks. Prices have shown little change. Business has been reported in ferrovanadium at $3.50 to $3.75 a pound contained. Ferrotungsten has sold at 42½ cents a pound contained, although some foreign alloy in warehouse continues available at 40 cents or a shade less. A carlot of French ferrochrome, 6 to 8 per cent carbon, sold at 10 cents, exwarehouse, New York. Sales of Norwegian or German low carbon ferrochrome have been reported at 22 cents contained, f. o. b. New York. Spot carlots of 50 per cent ferrosilicon continue reported sold at $55, delivered. Ferromolybdenum prices are unchanged at $2 to $2.50 a pound contained for standard 50 per cent alloy.

Alloy Inactivity Continues

Pittsburgh, July 25.—Inactivity continues in the ferroalloys market. Considerable ferromanganese, either domestic or foreign, might be purchased if buyers were assured prompt deliveries, or were certain imported material would arrive before the levying of the duty. Offerings of 1000-ton lots for September delivery still are being made here at $67.50, c. i. f. Atlantic seaboard. The Ford Motor Co. is in the market for 150 tons, a Pittsburgh user wants 50 tons for November and December delivery, and the Milwaukee Steel Foundry Co., a single carload. Less-than-carload lots are fairly numerous, one being disposed of at $134 per ton this past week. Most buyers of ferrosilicon have protected themselves by contracts, particularly on the 50 per cent grade. Around $57, freight allowed, is quoted on extended deliveries. One sale of 10 to 12 per cent ferrosilicon is noted involving 75 to 100 tons at $38.64, Pittsburgh. The Allegheny Steel Co. has been receiving quotations on ferrochrome but this is not expected to develop into purchases. Another Pittsburgh district user is in the market for a small quantity. Some domestic material has been offered here at 11¼ cents unsold. Spiegeleisen is quiet. Prices are unchanged at $35 and $36 for 16 to 19, and 19 to 21 per cent material, respectively.

The Nonferrous Metals

Zinc Goes Up With Good Market—Copper Continues Firm and Lead Regains Strength—Tin Active

	Copper: Electro delivered	Copper: Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
July 19.....	14.00	14.12½	31.62½	5.70	5.77½	18.00	5.00	32.00
July 20.....	14.00	14.12½	31.75	5.70	5.80	18.00	5.00	32.00
July 21.....	14.00	14.12½	32.00	5.67½	5.82½	18.00	5.00	32.00
July 24.....	14.00	14.12½	32.12½	5.67½	5.90	18.00	5.00	32.00
July 25.....	14.00	14.12½	32.20	5.75	5.97½	18.00	5.25	32.00

†Outside market quotation.

NEW YORK, July 25.—Buying of nonferrous metals against actual requirements was sufficient to make for considerable activity in the metal markets, despite the reluctance of buyers to accumulate supplies, due to strike uncertainties. No serious interruption to works operations has been reported, but some manufacturers are getting low on fuel and concern is expressed as to the situation if relief does not appear within two weeks. Metal prices have been firm to strong, throughout the list, excepting the lead market, and it came back today with good buying.

The copper market has been firm at 14.00c, delivered, for all positions, the past week, excepting occasional lots quoted 13.87½c, delivered, by one producer, under special circumstances. Outside sellers have conceded ⅛c, to 13.87½c refinery. A fair business has been done, both for export and with domestic consumers. Brass mills and wire drawers continue active, taking a larger tonnage of copper than ever before in peace times. Price cutting on rolled products has become less general, especially as mills are booked two or three months ahead and now are able to discriminate, picking out more profitable business. Deliveries of some lines, such as certain sizes of seamless tubes, are behind three months, with some mills. Casting copper has been selling to foundries at an improved rate, the market ranging from 13.37½c to 13.50c, refinery.

The zinc market has advanced 25 points further the past week, on active buying by sheet galvanizers, brass mills, zinc rolling mills and dealers. Sales of prompt and August shipment prime western were made as high as 6.00c East St. Louis. Brass special is commanding 10 points premium over prime western. High grade zinc has been selling at 6.75c, delivered.

Lead sales were rather scarce, but a few days ago the market became active again. Shipments on contracts continued at a high rate. Some holders of resale lead have been anxious to dispose of their commitments and sales of Missouri lead were reported down to 5.35c, East St. Louis. A sale of lead in eastern warehouses was reported on the basis of 5.60c, New York. These prices, however, were below the general market, which now is about 5.45c, St. Louis and 5.75c, New York.

Large purchases of 99 per cent grades of tin by solder and babbit metal makers, due in part to the wave of new construction, have about cleaned up the market for this grade. Tin plate makers also have bought further tonnages and deliveries on old orders continue at a high rate. The London tin market advanced steadily over the past week, reflecting covering purchases by American importers in London, also bullish operations by London traders. Prices here advanced about ½c to ¾c during the week.

New business in ingot aluminum has been extremely slow. Prices for foreign 98 to 99 per cent virgin ingot are unchanged at 18c to 18.50c, duty paid, New York. The American producer continues to quote 19.10c, delivered. Shipments on contracts continue at a good rate.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	21.00
High brass	17.25
Zinc, ga. 9 to 18 (plates ½ less)	7.5c
Lead, full sheets (cut ¼c more).	9.00
SEAMLESS TUBES	
High brass	21.00
Copper	23.75
RODS	
High brass, round, ⅜ to 2½ inch	15.25
Naval brass rod.....	17.75
WIRE	
Copper	15.25 to 15.75
High brass	17.75

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	9.00
New York	8.50
Chicago	8.50
HEAVY YELLOW BRASS	
New York	6.00
Chicago	6.50
Cleveland	5.50 to 6.00
ZINC	
New York	3.00
Cleveland	3.00 to 3.25
Chicago	2.75
HEAVY COPPER AND WIRE	
Cleveland	10.50 to 11.00
New York	11.00 to 11.25
RED BRASS TURNINGS	
New York	7.25 to 7.75
Cleveland	7.25 to 7.75
Chicago	7.75
YELLOW BRASS TUBING	
Cleveland	5.50 to 6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	5.50 to 6.00
New York	5.50 to 6.00
Chicago	6.00
ALUMINUM BORINGS	
Cleveland	6.50 to 7.00

Orders Coal and Car Priority

Interstate Commerce Commission Declares Immediate Emergency Under Authority of Transportation Act—President To Name Committee To Govern Production and Distribution—Steel Industry in Unpreferred Class—Profiteering To Be Combatted

WASHINGTON, July 25.—Declaring the emergency provided for in the transportation act exists on the railroads east of the Mississippi river, including west bank crossings, the interstate commerce commission ordered effective midnight tonight until further notice, priority for certain commodities and also ordered the railroads to supply cars in accordance with a preferred classified schedule.

Priority is accorded the movement of food for human consumption, feed for live stock, perishable products coal, coke, fuel and oil. Cars are to be supplied in accord with the following classification:

Class I—Special emergency cases to be determined by special presidential committee set up by Secretary Hoover.

Class II—Railroad and bunker fuel utilities directly serving the public, and federal state and municipal institutions.

Class III—Bituminous coal to Lake Erie ports for trans-shipment to Lake Superior.

Class IV—Commercial sizes of coal for domestic use.

Class V—All other purposes.

No coal of the first four classes is to be reconsigned or diverted except to same or prior class.

The commission directed the railroads to reserve for coal hauling all open top cars except flat bottom gondolas with sides under 36 inches. Non-coal loading railroads were ordered to divert all of their open top equipment to coal roads and to give preference to empties to mines. The commission also directed the carriers to embargo against receipt of coal or other freight in open top cars to consignees not unloading in 24 hours. Coal for trans-shipment to the Northwest is an exception to this rule. The railroads also were ordered to route freight by the most direct route identical with the similar order issued in 1920.

Committees To Be Formed

Secretary Hoover by Friday expects to have formed committees to direct the distribution of fuel. General supervision is to be lodged in a committee the President is to appoint, including representatives of the commission and of the departments of commerce, interior and justice. Then there will be an administrative committee comprised of representatives of the railroads of the coal operators and the presidential committee and later probably of industries.

The presidential committee is to have representatives in each producing district. Each district also is to have a local operators committee. The presidential committee is to pool all cars including those privately owned. These are to be allocated by local committees to operators to meet needs of the first four priority classes.

Profiteering is to be checked by the assignment of cars only to those operators who observe the Garfield level of prices. The price maximum Secretary Hoover is to enforce is $3.50 a ton at the mine. Any surplus over the first four classes is to go to industry in general, including the iron and steel industry which is in Class V. The output of all company mines is to be taken over along with all company cars. As only Lake Superior ports are included in Class III it is expected Milwaukee and other Lake Michigan ports will get coal by rail.

Secretary Hoover today said the administration has exhausted all efforts to end the strike and now is concentrating on production and distribution. The White House states union operators will be given a fair opportunity to get into production and no coal commission will be named until before next week. That commission is to represent only the public. It is believed the President will seek legislation to give power to the commission. The priority orders and distribution plan now affects only non-union mines but will cover union mines as production is resumed.

The commission acted under the following section from the transportation act, especially subhead "d":

"Whenever the commission is of the opinion that shortage of equipment, congestion of traffic, or other emergency requiring immediate action exists in any section of the country, the commsision shall have it is hereby given authority, either upon complaint or upon its own initiative*****

"(a) to suspend the operation of any or all rules, regulations or practices with respect to car service for such time as may be determined by the commission; (b) to make such just and reasonable directions with respect to car service without regard to the ownership as between carriers of locomotives, cars and other vehicles during such emergency as in its opinion will best promote the service in the interest of the public; (c) to require such joint or common use of terminals, including main-line track or tracks for a reasonable distance outside such terminals***; and (d) to give directions for preference or priority in transportation, embargoes or movement of traffic under permits, at such time and for such periods as it may determine, and to modify, change, suspend or annul them."

The belief here is that the Northwest can be tided over this winter provided 8,000,000 to 10,000,000 tons of bituminous coal are moved up, and this Secretary Hoover, believes can be accomplished between Aug. 15 and Dec. 15. The carriers have assured the secretary that if the movement is underway in volume by Aug. 15 they can handle almost 10,000,000 tons in the ensuing four months. The Atlantic seaboard's supply is being supplemented by English and Welsh coal now coming in both foreign and shipping board bottoms. The shipping board already has chartered 40 vessels, capable of carrying 300,000 tons a month, to load coal abroad, and can increase this to 500,000 tons a month. In addition, nearly 300,000 tons of foreign bottoms are now bound west with coal.

No Legislation Yet

From the White House comes the statement that no legislation pertinent to the railroad situation will be enacted prior to the termination of the shopmen's strike. The railroad stike is regarded here as more serious than the coal strike, as the fuel situation would be improved at least 50 per cent were the carriers able to move all the nonunion coal that could be mined. The car supply is ample, and the same is true in regard to motive power, although signs of a dearth of motive power are appearing because of the lack of shopmen to make repairs. Congestion at gateways in the nonunion fields is the seat of today's difficulties. The administration was most confident of settling the railroad strike last week and its members frequently so predicted. Had the rail quently so predicted.

The week ended July 8, the first week of the shopmen's strike and the fourteenth of the coal strike saw 718,319 carloads of revenue freight loaded, compared with 876,896 in the preceding week and 640,535 in the corresponding week of 1921. That the July 4 holiday accounts for substantially all of the decrease is evidenced by the fact that the average daily loading in the week of July 8 was only 2475 cars under the average of the week of July 1.

Twin Strikes Close 15 Stacks

Blast Furnaces Blowing Out as Fuel Famine Grows Steadily Worse—Wholesale Suspensions Now Appear Inevitable—Steel Shortage More in Evidence—Many Open Hearths Shut Down

AT LEAST 15 blast furnaces have ceased operating in the last 10 days as a result of the fuel shortage due to the coal strike directly and to the walkout of railroad shopmen, indirectly. The effect of the shopmen's strike is felt principally in delaying or stopping altogether shipments of coal and coke, particularly from southern districts, and comparatively little difficulty has been encountered so far in shipping iron and steel products.

Six valley furnaces have been blown out or banked. In the eastern territory, four furnaces of the Bethlehem Steel Co. have gone down in the past few days. The situation generally is steadily becoming more critical and additional furnaces are about to be blown out. Many others have fuel sufficient for only two or three weeks' operation, and it is generally considered only a question of time before sweeping suspensions ensue. Prohibitive figures are being asked for the small quantity of beehive coke now available, and the supply of by-product fuel is diminishing rapidly as demand continues to increase daily.

In the steel department, the slow strangulation of the industry also is in progress. Open-hearth operations are slowing up. The shortage of steel is becoming more pronounced, and the effect is discernible particularly among the sheet mills, where demand is urgent. Many steelmakers are operating on a hand-to-mouth basis and report they will be unable to proceed beyond a few days. An extraordinary attempt is being made to keep in operation, $8 to $9 being paid for coal, the tonnage of which is scarce at those figures.

Steel Production Affected by Strikes

PITTSBURGH, July 25.—Seriously affected by the combined railroad and coal strikes, the iron and steel industry in this section is marking time, hoping that a change for the better shortly will come as conditions at the moment are so bad they cannot easily be worse. So far as deliveries are concerned, steel mills report little delay traceable to the railroad strike although the latter makes for a shortage of good order box cars which is being noted, particularly by the tin plate, sheet and strip steel mills. The railroads are endeavoring to climb out of their difficult situation by hiring men whenever possible. Progress is being made daily but the fact remains that both cars and locomotives are seriously crippled.

Notwithstanding the fact several blast furnaces have had to be blown out in the Pittsburgh and Youngstown territory, the trade is surprised that so many continue active. The National Tube Co. keeps 9 out of 11 active; the Carnegie Steel Co., 38 out of 59; the Midvale Steel & Ordnance Co., 4 out of 11 although 2 may have to go down this week; the Jones & Laughlin Steel Co., 6 out of 12; and the Pittsburgh Steel Co. and the Crucible Steel Co. each keeps one going out of 2, although it is almost a day-to-day proposition. The Shenango Furnace Co. has had to bank its furnace at Sharpsville. The chief difficulty lies in the lack of movement of coal from the West Virginia and Kentucky coal fields on which the iron and steel industry largely had come to depend when the coal strike so adversely affected the Connellsville and Pittsburgh districts. Congestions on the Louisville & Nashville, Norfolk & Western, and Chesapeake & Ohio railroads still are acute and until these roads are able to spot empty cars and move loaded ones not much relief in the way of coal supplies from these territories is expected. In the meantime, efforts are being made to resume operations at mines in the Pittsburgh territory with little or no success.

Insofar as the Connellsville region is concerned, little change is noted since a week ago although it is reported the H. C. Frick Coke Co. has commenced operations at two or three additional mines.

Blast Furnace Operation in Valley Curtailed

Youngstown, O., July 25.—Rolling mill operation in the Mahoning valley has not been affected by the coal strike due to the preparation made by nearly all companies a few months ago in accumulating stocks. Blast furnace operation throughout the district, however, has suffered considerably, five stacks having been banked within the past 10 days. These include two at the Republic Iron & Steel Co.; and one each at the Trumbull Steel Co., the Brier Hill Steel Co. and the Cherry Valley furnace at Leetonia, O., of the Hanna Furnace Co. This list will be augmented this week by the banking of the Jeannette stack of the Brier Hill Steel Co. The inability of the railroads to deliver high-volatile coal and in a few instances the confiscation of fuel by certain carriers accounts for the slowing down of blast furnace activity. Operation in this direction now stands at 43 per cent of capacity representing 12 active furnaces and including five at the Carnegie Steel Co.; four at the Youngstown Sheet & Tube Co.; and one each at the Republic Iron & Steel Co., the Brier Hill Steel Co. and the Sharon Steel Hoop Co. If relief is not forthcoming within the next two weeks further curtailment of blast furnace schedules undoubtedly will be necessary.

Bessemer operation continues as one week ago with two vessels of the Youngstown Sheet & Tube Co. and two at the Carnegie Steel Co. blowing and two at the Republic Iron & Steel Co. idle. Independent open hearth schedules are maintained at 88 per cent, the same as for the past 12 weeks.

A survey of this district reveals that

each sheetmaker has sufficient coal on hand to operate the mills at the present rate for at least three weeks; some are assured of six weeks run. Sheet mill operation, however, is more uncertain in view of a shortage of steel which may prevail in the immediate future. At present sheet mill operation is 95 per cent representing 106 active units.

Miscellaneous activity includes three finishing and five pipe mills at the Republic Iron & Steel Co.; 29 hot tin mills at the Trumbull Steel Co.; one plate mill at the Brier Hill Steel Co.; and one bar and 10 pipe mills and the rod and wire departments at the Youngstown Sheet & Tube Co.

Several Eastern Blast Furnaces Banked

Philadelphia, July 25.—The coal and railroad strikes rapidly are causing an acute situation in the eastern iron industry. The Warwick furnace at Pottstown, Pa., has been banked and the Bethlehem Steel Corp. has banked four stacks, three at Bethlehem and one at Steelton. Only two eastern merchant furnaces are taking business and it is likely one of these will withdraw unless relief is forthcoming. Furnaces are affected most by the scarcity of coke. Steelworks are also affected. The Central Iron & Steel Co. has plenty of coal at its mines but due to the strike on the Baltimore & Ohio railroad is unable to ship any. This company is operating on fuel oil which costs about $3 a ton more than coal. The Lukens Steel Co. is operating three open-hearth furnaces on oil and four on coal. It will put more on oil. The American Bridge Co. has started using oil and the Phoenix Bridge Co. by unusual measures has enough coal to last four weeks. The Bethlehem Steel Corp. has plenty of coal at Sparrows Point, Md., but is unable to ship. Practically all the Bethlehem plants are operating on a narrow coal margin and if deliveries continue as at present shutdowns within the next two or three weeks will be inevitable. The same situation prevails at practically all eastern industrial plants.

Southern Ohio Plants Face Early Shutdowns

Cincinnati, July 25—Steel mill, blast furnace and coke oven operators are hoping they will be able to continue operations but plans are being made only from day to day. The American Rolling Mill Co. is reported to be in position to keep its Buckeye and Ashland stacks going for a short time with coke on hand and in prospect of delivery and the Belfont Iron Works Co. has a small stock on hand. The Norton Iron Works is said to have about exhausted its resources and may have to bank its stack soon. The Kentucky Solvay Coke Co. has not reduced output and is keeping up well on shipments to foundry and commercial consumers. Its production program after next Thursday depends on developments in the railroad strike situation and the ability of the Chesapeake & Ohio railroad to keep up its present crippled service. By-product ovens at Terre Haute are reported to be in process of banking today but close to capacity production is being maintained by Indianapolis ovens.

New England Unaffected by Coal-Rail Strikes

Boston, July 25.—New England continues singularly free from adverse effects of the coal and rail strikes. Both the Boston & Maine and the New Haven railroads report service practically normal, but shippers are inclined to question whether this can be maintained for any length of time in view of the fact the coal situation is more serious. Bituminous stocks are shrinking rapidly and some public utilities have little more than one month's supply on hand. Consequently demand is urgent. Some Boston coal shipments are being rationed. Relief is expected through the delivery of foreign coal.

The New Haven railroad is getting considerable Canadian coal for its own use and foundries in the district are apparently well covered through coke contracts and stocks. On the whole industry is not affected.

Transportation Delay Is Obstacle in South

Birmingham, Ala., July 25.—The shopmen's strike is delaying shipments of pig iron, cast iron pipe and some other manufactured products. No iron and steel works in this district have been forced to shut down, though the car shortage is acute on two of the large railroads. Furnaces are operating at the maximum. Many of the blast furnaces are connected with the ore and coal mines by railroads belonging to the iron companies. Several of the large mining companies have appealed to Washington for a better distribution of cars. Some of the railroads are reported to be confiscating coal.

Pig iron production in the Birmingham district is increasing. Steel mills are operating at the same rate as recently. Iron and steel scrap, dealers report, is moving satisfactorily.

A few passenger and freight trains have been cancelled in this district. The Louisville & Nashville railroad announces that all its trains are moving without delay. Coal production during the past week was cut down by 30,000 to 50,000 tons and some mines have been forced to suspend work owing to the car shortage.

Car Congestion Is Chief Trouble at St. Louis

St. Louis, July 25.—In this district no iron or steel plant has been compelled to discontinue operations because of the coal or railroad strikes. Throughout the week ending July 22, production at foundries, mills and machine shops continued at the highest levels attained in the present movement. However, doubts are expressed as to their ability to continue the present rate much longer. One leading East-Side steel works has fuel sufficient only for another week, and another important mill cannot operate beyond Aug. 1 on present stocks.

Jobbing foundries complain of an acute shortage. Four stove plants have fuel for 30 to 45 days; two, enough for three weeks and four, for ten days to two weeks. Others are depending on current receipts.

Uncertainty incident to the shopmen's strike is causing the greatest amount of inconvenience. None of the carriers is accepting freight with assurance of prompt shipment. The greatest difficulty is experienced in locating and getting in cars even when they are close to destination. Congestion is noted at some of the larger steel plants, it being difficult to obtain cars. Many of those placed are in bad order.

Keen competition exists for all coal offered. A quotation of $9.25 per ton at the mine was received by the St. Louis supply commissioner. This would be equivalent to $11.12, delivered in St. Louis. The previous figure was $7.10.

Car Congestion Retards Coal Output

Washington, July 25.—Under the influence of the railway shopmen's strike coal production is rapidly declining, the geological survey reports. Traffic congestion has interfered with the placement of empty cars at nonunion mines, and the weekly output of coal is already running 1,700,000 tons below the high point reached late in June. The week, July 17-22, may set a new low record. Preliminary reports indicated that production could not exceed 3,600,000 tons, against a minimum of 3,575,000 tons in the third week of the strike and a maximum of 5,363,000 tons in the twelfth week.

In comparison with normal years the present deficit in production is even more marked. Final returns on the fifteenth week of the strike July 10 to 15 show

4,114,000 tons of bituminous coal and 31,000 tons of anthracite, a total for all coal of 4,145,000 tons. In the corresponding week of 1921, a year of depression, the total quantity raised was 9,280,000 tons; in 1920 it was 11,500,000 tons. In other words, the output for the week July 17-22 is from 5,000,000 to 6,000,000 tons below normal.

Dumpings of soft coal at Lake Erie ports failed to recover after the Independence day holiday. A total of 169,000 tons was dumped. This was a decrease from the week preceding of 82,127 tons, or 33 per cent, and was but 23 per cent of the record for the corresponding week a year ago. Of the total dumpings, 153,501 tons were cargo coal and 16,477 tons were vessel fuel.

The following is a record of bituminous coal, in net tons, dumped into vessels at Lake Erie ports:

Week ended	Cargo coal	Vessel fuel	Total dumped
July 2, 1922.....	370,135	25,102	395,237
July 9, 1922.....	236,035	16,070	252,105
July 16, 1922.....	153,501	16,477	169,978
Season to July 16, 1922	4,074,001	170,094	4,244,095
Corresponding period, 1921....	11,555,812	351,398	11,907,210
Corresponding period, 1920....	4,997,270	378,880	5,376,150
Corresponding period, 1919....	11,356,096	509,258	11,865,354

The following gives the current record and comparisons of production of beehive coke in the United States:

	July 15, 1922	July 8, 1922	Mar. 25, 1922	Mar. 18, 1922
Pennsylvania and Ohio	69,000	64,000	134,000	118,000
West Virginia...	6,000	6,000	10,000	9,000
Alabama, Tenn., and Georgia...	6,000	6,000	8,000	7,000
Virginia and Kentucky	9,000	7,000	9,000	8,000
Colorado and New Mexico	5,000	6,000	2,000	3,000
Washington and Utah	3,000	5,000	4,000	4,000
United States total	98,000	94,000	167,000	149,000
Daily average....	16,000	16,000	28,000	25,000

Chicago Mills Maintain Operating Rates

Chicago, July 25.—While more loaded freight cars are being indefintiely delayed on sidings due to need of repairs the actual handicap to the Chicago district steel mills and manufacturing plants is not as serious as expected a week ago. The Illinois Steel Co. continues to operate between 84 and 85 per cent of capacity, and the Inland Steel Co.'s operations are between 65 and 70 per cent with scarcely any change noticeable during the week. Without doubt, however, the fuel situation is alarming in many quarters. One independent steel company will be forced to buy spot fuel in the open market inside of two weeks and officials state that rather than pay the current price, which is $13 delivered Chicago, for coal, they will shut down. Other companies express this same sentiment. Many of the western roads are rapidly breaking in new men on repair work and several, notably the Chicago & Alton, report a recent improvement in the handling of disabled equipment. Steel mill operations which so far in this district have held up better than in most districts, cannot continue, according to one authority familiar with the situation.

The Ft. Wayne Rolling Mill Corp., Fort Wayne, Ind., has closed its plant for an indefinite period due to the coal and rail strikes. This is the first industry at Ft. Wayne, to feel the pinch of the fuel shortage. The company has mines in Kentucky, which have been providing it with fuel.

Works Struggling To Avoid Shutdown

Cleveland, July 25.—Actual changes in iron and steel-works operations in the week are not pronounced, although widespread cessation of operations is contemplated as a growing probability. Many works are managing to delay for a few days what appears to be the inevitable. As high as $8 to $9 is being paid for coal, the price of which previous to the strike was $2.50. The coal shortage threatens to paralyze the lake fleet, in one case a large ore shipper borrowing coal from a customer to enable it to continue delivering ore. A rumor that the Pittsburgh Steamship Co. has laid up its barges is incorrect.

The Hanna Furnace Co. has blown out its Cherry Valley furnace at Leetonia, O., and the McKinney Steel Co. also has discontinued operating one of its furnaces. The McKinney company has seven of its 14 openhearths in operation, as many as it can obtain gas to operate, while the Upson Nut Works of the Bourne-Fuller Co. continues with three of its five open hearths active. Coke oven operations in this district are impeded.

In the lake ore trade the chief difficulty so far has been to obtain cars on the Great Northern railroad, but there has been an improvement this week, and shippers have been informed that more cars will be available Thursday. The Great Northern docks at the head of the lakes are operating at 50 per cent of capacity. The Chicago & Northwestern dock at Ashland is operating at the same rate. Practically all ore producers are cutting down shipments, but one large company having coal and vessel connections may put on more boats. This company's vessel department will not feel the pinch for some weeks, under present circumstances.

At Toledo a shortage of motive power is noted on the Baltimore & Ohio railroad.

Corporation's Ore Roads Well Supplied

Duluth, July 25.—Shipments of iron ore from the Minnesota ranges have not been impeded so far through the railroad or miners' strikers, except temporarily on the Great Northern railroad. The Steel corporatoin's railroads are carrying normal tonnages to the docks at Duluth and Two Harbors. Shipments from the Lake Superior district in July, it is predicted, will reach nearly 1,000,000 tons. The Oliver Iron Mining Co. is well supplied with coal, but most of the independents are short. Every effort is being made to get ore down the lakes before the vessel fuel situation grows worse.

Roll and Mill Equipment Plants Consolidated

Pittsburgh, July 25.—Under the title of the Mackintosh, Hemphill Co., formerly Mackintosh, Hemphill & Co., a merger has been consumated whereby it acquires the plant including fixed assets, good will and business of the Pittsburgh Iron & Steel Foundries Co. and the A. Garrison Foundry Co. The new company is issuing $3,000,000 in first mortgage, 27 years, 6 per cent, sinking funds, gold bonds. Mackintosh, Hemphill & Co. was incorporated in 1893 under the laws of Pennsylvania to manufacture iron and steel mill equipment, alloy and steel rolls and castings. It succeeded to a business which had been in continuous operation for about 100 years, having been founded about 1825 by Alexander McClurg as the Fort Pitt Foundry. The consolidated company will have an annual capacity of approximately 65,000 tons of iron and steel and alloy castings and will be equipped for the manufacture of iron, steel, copper, brass and tube mill machinery and equipment, alloys, steel, chilled and sand iron rolls, miscellaneous machinery and equipment.

The properties have a ready market value of in excess of $2,000,000 and the appraised value of the plant is in excess of $7,250,000, comprised as follows: Mackintosh, Hemphill Co. plant approximately 3½ acres at Twelfth street, Pittsburgh; Pittsburgh Iron & Steel Foundries Co.'s plant over 20 acres at Midland, Beaver county, Pa.; the A. Garrison Foundry Co. plant 3¾ acres at South Penn street, Pittsburgh. To provide for future development as the means of the business required, the Mackintosh, Hemphill Co. owns a 45-acre tact of vacant land well suited for manufacturing purposes, near Aspinwall, Allegheny county, Pa., fronting on the Allegheny river.

Coast Steel Sale Improved

First Six Months of 1922 Shows Decided Gain Over Preceding Half Year—Water Rate Cut Extended—Structural Market Active

SAN FRANCISCO, July 22.—Business conditions on the Pacific Coast during the first six months of the year have shown a marked improvement over the preceding six month period and this is especially true as regards steel sales. One company reports an increase in sales, in value, during the first half of this year over the entire year of 1921 of more than 500 per cent. Demand for iron and steel is about on a par with the preceding week, with consumers interested in deliveries and in the rate war being waged by intercoastal steamship lines. All lines are quoting 30 cents per 100 pounds from Atlantic to Pacific Coast ports and some quotations as low as 25 cents have appeared. Within the last few days several companies have included the Gulf ports and the south Atlantic ports in the reduced rates which now enables the southern steel mills to compete again with north Atlantic coast mills for Pacific Coast business.

Pig Iron and Coke

Foundries in this district appear to be well covered for present pig iron needs and such sales as have been reported involve small tonnages only. With 30 and 25 cents per 100 pound rates now obtainable from the warring steamship companies for shipment out of Mobile and Gulf ports to Pacific Coast points, Southern iron can now be delivered at around $28 a ton which compares favorably with foreign quotations.

Coke sales are comprised of scattered orders for carload lots only and little interest is being displayed owing to the fact foundry operations are unsatisfactory.

Bars, Plates and Shapes

Bar mill operators report a better volume of business coming in for both merchant and reinforcing bar material and are much more optimistic than they were at the first of the year. A total of six out of 12 of the open hearths in this section are in operation. Judson Mfg. Co. is operating three, the Pacific Coast Steel Co. two and the Columbia Steel Co. one and the latter expects to start another next week. The merchant bar price is firm at 2.65c f. o. b. San Francisco although there is some talk of a reduction being put into effect shortly. Concrete bars, on the other hand have been sold as low as 2.35c although the general run is 2.40c to 2.45c f. o. b. San Francisco. One mill reports the booking of 1800 tons, comprised of small orders, of merchant bars in the last four weeks.

Plate prices appear to be firm at 2.30c delivered San Francisco. Surplus shipyard material is being exhausted rapidly, causing a better demand from jobbing interests. The Pacific Car & Foundry Co., Seattle, has an inquiry out for 1000 tons for car repair work for the Northern Pacific. The Standard Oil Co. recently placed 50 tanks, 10 foot diameter,, involving 250 tons. An inquiry is current this week for 800 tons of plates and 140 tons of blue annealed for tank work.

The structural market continues active with several fair sized jobs in sight. Prices on plain shapes range around 2.30c delivered San Francisco.

Other Finished Material

Municipal and private demand for cast iron pipe has fallen off during the past week or two. Nogales, Ariz., has rejected bids on 375 tons of 4 to 10-inch and will readvertise shortly. Bids were opened on July 21 for 1270 tons of 20-inch for Seattle.

The Bethlehem Steel Co. secured 160 tons of 90-pound rails, 400 pairs of splice bars and 12,000 tieplates for the Alaskan engineering commission. The United States Steel Products Co. secured 100 tons of 70-pound rails for the Oakland Traction Co. The Bethlehem Steel Co. $43,000 worth of crossings and special work for the Seattle municipal railway.

Structural Sales

On Coast in July Expected to Set Year's Record

Seattle, July 22.—While there has been a slight depression in the local iron and steel trade during the last two weeks, jobbers report the total volume sustained with indications of an excellent business during the balance of the year. Demand for material to be used in building and improvement work is so strong that the slight decrease from the logging and lumber industry is hardly noticeable. The trade is closely following the intercoastal water rate war but because this situation is so chaotic jobbers have not yet adjusted local prices.

Pig Iron and Coke

This market remains unchanged, although individual foundries are buying in small tonnages; the demand is better as the foundries in this district are operating to greater capacity, estimated to be about 75 per cent. The shortage in coke has been relieved by the arrival of the first consignment of British coke. Another lot of 500 tons is due in August and a third shipment of Scotch coke, amounting to 1000 tons, is scheduled to arrive in October. Whether this source of supply will be maintained is uncertain as it is reported that foreign sellers have withdrawn their quotations from this market. In the meantime stocks of coke are not more than sufficient to care for the demand. The rate on pig iron from Atlantic ports to this coast has been cut from $11.20 to $5.60 by the intercoastal lines but the reduction has not been in effect for sufficient time to indicate what change it will have on the market.

Bars, Plates and Shapes

Bars used in construction work are moving freely while plates and shapes are in demand. As a rule the orders are in small tonnages but the totals register a satisfactory volume.

Other Finished Material

Structurals, nails and sheets are all selling well, the movement this month probably setting a record for the year. Both plain and corrugated sheets are being sold in quantity while sustained building is keeping up the demand for nails, builders' hardware and other materials used in construction. Dealers report that the lower water rates from eastern centers is not being reflected to any extent here as they are finding difficulty in getting prompt deliveries from the mills and consequently the water rate is of lesser importance than it would be under other conditions.

Old Materials

This market remains firm but there has been little change since the first of the month. Demand for both steel and cast iron scrap is well sustained. Foreign interests are still seeking steel scrap but dealers report their stocks extremely low in both varieties.

Scrap Shipments Retarded

(Continued from Page 216)

market is inactive. Prices are firm with no change in current quotations.

Greater Strength Apparent

St. Louis, July 24.—The scrap market rules strong on all grades. Mills and foundries are clamoring for shipments which the railroads are unable to make, and the yards are obliged to ship from their accumulations in order to keep the plants going. To date no plants have been obliged to close down because of lack of fuel, but unless the coal strike is broken, this state of affairs cannot continue long. A canvass of leading industries in the past few days showed that fuel supplies are low. Heavy melting steel continues in demand and is higher, the price having been advanced to $15. Yard stocks of all grades are dwindling, and the market has further strengthened heavy shipments out of this territory. Premiums over current quotations are being offered by some interests for prompt delivery, and all consumers are apparently anxious to get in all tonnages they have under contract. The railroads are offering little scrap. The only list out last week was 2200 tons by the Northern Pacific.

No Tonnages Moving

Cleveland July 25.—Continued stagnation in the local scrap market as a result of both strikes, is reported by dealers. While some of the prices have shown weakness, this is only nominal as no sales of any size have been reported by which the price range may be gaged. For that reason, the schedule of a week ago still is current.

More Coal Coming from Britain

Shipments to United States Expected To Total 300,000 Tons by End of July—Burma Oil Company Buys 200,000 Boxes of Tin Plate—Currency and Labor Difficulties Handicap France and Belgium

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

Sterling $4.46

LONDON, July 24.—All Cardiff shippers of coal are receiving inquiries for large tonnages from the United States due to the strike conditions. Shipments amounting to 200,000 tons already have been arranged, and it is estimated that this will be increased to 300,000 tons by the end of July. Should the American strike continue, every indication points to exceedingly large exports of British coal to the other side. These developments are the outstanding points of the coal market at this time.

A slight reaction is noted in the British iron and steel market. Three blast furnaces in the Barrow-in-Furness district and one at Middlesbrough have been banked. Two in the Midlands have been relighted. Stocks of pig iron on the West coast exceed 100,000 tons. Traders are waiting for railroad rate reductions which will go into effect in August. Pig iron and coke prices are easier.

A Burma oil company has ordered 200,000 boxes of tin plate. The number of tin plate mills active has been increased by nine during the month, the total operating now being 471.

The slump in the franc has stimulated competition from Belgium which is offering billets at £7 ($31.22) delivered, and finished bars and joists at £8 10s ($37.91).

The industrial progress of both France and Belgium is checked by currency and labor difficulties. An offer from Canada of billets at $45 per ton is not competitive.

The Germans are buying heavily of railroad material in France and Belgium. In Germany production is decreasing owing to the scarcity of fuel. The monthly output of coal has dropped to 2,500,000 tons. Large increases are expected soon in steel prices. The medium-sized works are without money and are suspending.

Price Agreements Abandoned; Trade Still Dull

European Staff Special

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$4.44

BIRMINGHAM, England, July 14.—The quarterly meeting in the British iron and steel markets this week have not brought any material addition to business and have produced the impression that the recovery is going to be very slow. No great improvement is looked for this year. It is evident that the long stoppage in the engineering industries and shipbuilding is still exerting an adverse influence on trade.

The severity of competition is indicated by the decision of the ironmasters' committee in Cleveland to discontinue the fixing of official minimum quotations, thus making prices a matter of individual bargaining, for the first time since 1916. Almost simultaneously the South Wales Siemens Steel association also decided to abandon price regulation for billets, a measure coinciding with the slump in continental currency which brought into the Welsh market a lot of French and Belgian billets.

So far it does not appear that prices have been reduced, although the upward movement has been checked. The effect, may, however, be seen soon in a resolute effort by Cleveland to arrest the buying of Luxemburg iron in Glasgow which has been going on now for several weeks, the foreigners offering material at prices which neither Cleveland nor Midland furnaces have been able to equal. There are now 29 blast furnaces operating in Cleveland, and apparently, the district looks for more business as a number of furnaces are being made ready. The export trade keeps up fairly well, Germany still being a good buyer. The price quoted at Grangemouth on the Clyde for continental iron is £4 10s ($19.98) as against £4 16s 8d ($21.46) quoted by Cleveland.

In the North Lancashire and Cumberland area, prices have been slightly reduced for special and semispecial qualities of iron and it has been found possible to put one furnace on ferromanganese because of the steady demand from America and the continent. The principal cause of the slackness in that district is the continued stagnation in engineering and shipbuilding in which industries 10,000 men are reported to be unemployed. Prices are a shade easier for East coast hematite, the most noticeable buying being on foreign account.

The iron and steel trades benefit very slightly from freight rate reductions to take effect Aug. 1; chiefly through a reduction in the rate on fuel. The charges for coal, coke and patent fuel are reduced from 75 per cent to 60 per cent above prewar rates, and the flat rate from 3 pence to 2 pence per ton. For the conveyance of iron ore and limestone the flat rate is reduced from 3 pence to 2 pence per ton, the general percentage increase remaining at 50 per cent. For iron and steel generally the percentage of increase remains at 75 per cent, but the flat rate is reduced from 6 pence to 4 pence per ton. Indirectly, the industry will derive a little benefit from a reduction in the carriage of hardware, but the effect of this will be some time in developing. Generally speaking the concessions are negligible.

The importance of railway rates may be judged from the fact that for a Midland blast furnace the rail costs on ore, lime and fuel for the production of a ton of pig iron are still £1 14s 4d ($7.62) as compared with 19 shillings 1 pence ($4.23) before the war. The former figure is a reduction of 7 shillings 2 pence ($1.58) from the maximum war charges.

One effect of the slump in the exchanges has been to give an opening to continental steel makers. Large quantities of billets have been purchased by British consumers at £7 2s 6d ($31.63), delivered.

Finished steel has been entirely off the market for some time as a foreign competitor, but one large merchant this week received an offer by a Belgian firm to supply bars, either round square or flat, at £8 10s ($37.74), delivered. The seller demanded an answer within a week in view of the prospect of a recovery in the value of the franc.

The Birmingham quarterly meeting was largely attended, with strong representation from Scotland, Middlesbrough, Sheffield and South Wales. In all cases, however, except the last named district continued depression had to be reported. There are one or two cheerful signs. The reduction of the bank rate to 3 per cent will relieve slightly the severe financial stringency. Complaints have hardly ever been so numerous of inability to get payment of accounts.

The makers of marked bars have decided to maintain their selling price at £13 10s ($59.94), believing that iron prices will tend to increase. This may be true of best iron, which in bad times always commands a better

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace. or F.o.b.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	28.99	6 10 0
Sheet bars	28.99	6 10 0
Wire rods	42.37	9 10 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	39.58	8 17 6
Steel bars, England, ½ to 3-inch, for export	37.91	8 10 0
Plates, ship, bridge and tank, England	39.58	8 17 6
Plates, ship, bridge and tank, England, for export	37.91	8 10 0
Plates, ship, bridge and tank, Scotland	39.58	8 17 6
Plates, ship, bridge and tank, Scotland, for export	37.91	8 10 0
Beams, England	40.14	9 0 0
Beams, England, for export	36.80	8 5 0
Beams, Scotland	40.14	9 0 0
Beams, Scotland, for export	37.91	8 10 0
Sheets, black, 24 gage	47.39	10 12 6
Sheets, galvanized, 24 gage	69.69	15 12 6
Rails, 60 lbs. and over	35.68	8 0 0
Rails, 60 lbs. and over, for export	33.45	7 10 0
Tin plate, base box, 108 lbs	4.35	0 19 6
Steel hoops	46.83	10 10 0
Steel hoops, for export	44.60	10 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	20.07	4 10 0
Hematite, West Coast, Mixed Numbers	20.96	4 14 0
Basic Middlesbrough	17.84	4 0 0
No. 3 Foundry, Middlesbrough	19.62	4 8 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.06	4 1 0
No. 3 Foundry, Northamptonshire	16.73	3 15 0
No. 3 Foundry, Staffordshire	17.84	4 0 0
No. 3 Foundry, Scotch	20.63	4 12 6
Ferromanganese, 76 to 80 per cent	66.90	15 0 0
Ferromanganese, 76 to 80 per cent, for export	63.56	14 5 0
COKE		
Yorkshire furnace	4.01	0 18 0
Yorkshire foundry	6.13	1 7 6

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	17.36	8265
Foundry, No. 3, Oberhausen	14.92	7105
Bessemer Stahleisen, Siegen	16.63	7920
COKE		
Ruhr furnace	3.75	1784
Ruhr foundry	3.89	1851
SEMIFINISHED STEEL		
Billets	19.57	9320
Sheet bars	20.81	9910
Wire rods	20.29	9660
FINISHED STEEL		
Standard rails	26.31	12,528
Merchant bars	24.09	11,470
Structural shapes	23.71	11,290
Ship plates	27.01	12,860
Medium plates, 3 to 5 millimeters	30.68	14,610
Sheets, below 3 millimeters	32.99	15,710
Tin plate	81.90	39,000
Plain wire	25.91	12,340
Bands and strips	27.36	13,030

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	26.59	315
Basic Bessemer, Lorraine	17.72	210
Foundry, Longwy, No. 3, sand-cast	16.88	200
Foundry, Longwy, No. 3, chill-cast	17.72	210
Ferromanganese, 76 to 80 per cent	79.76	945
COKE		
French furnace	9.96	118
German, Belgian and British furnace	7.85	93
French foundry	10.80	128
SEMIFINISHED STEEL		
Blooms	26.59	315
Billets	28.27	335
Sheet bars	30.38	360
FINISHED STEEL		
Standard rails	46.42	550
Merchant bars	35.45	420
Angles	40.09	475
Normal beams and profiles	40.09	475
Plates, ship and tank, 10 millimeters and thicker	49.80	590
Plates, bridge and tank, 5 to 10 millimeters	54.02	640
Sheets, black, 3 millimeters	60.77	720
Sheets, blue annealed, 2 millimeters	75.96	900
Shafting, cold-drawn, 40 to 60 millimeters	71.74	850
Bars, 2 per cent nickel steel	92.84	1100

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIC IRON		
Basic bessemer, Belgian	15.51	195
Basic open-hearth, Belgian	16.71	210
Gray forge, Belgian	15.51	195
Foundry, No. 3, Belgian	17.50	220
Foundry, No. 3, Luxemburg	17.50	220
Foundry, No. 3, Lorraine	17.10	215
SEMIFINISHED STEEL		
Blooms	24.66	310
Billets	25.46	320
Sheet bars	26.65	335
Wire rods	38.18	480
FINISHED MATERIAL		
Standard rails	31.82	400
Merchant bars	32.22	405
Normal beams and profiles	30.23	380
Plates, 5 millimeters and thicker	36.99	465
Sheets, black, 3 millimeters	41.37	520
Sheets, galvanized, 1 millimeter	105.40	1325
Plain wire	48.53	610
Galvanized wire	62.45	785
Wire nails	35.40	445

All prices are f.o.b. furnace or works.

sale than that of ordinary bar iron, but the latter material is slumping, and there are strong complaints that whereas at least £11 10s ($51.06) is necessary to cover the cost of production firms are selling as low at £7 10s ($33.30).

The Welsh visitors to Birmingham were the most cheerful, having orders for the next two months, although very little is on home account.

The sheet trade now shows a little improvement, partly because of some revival in the hallow-ware industry and the continued activity in motor building. It is said that the makers of galvanized sheets have made an effort to arrive at a common selling price, but if this is so no practical result has followed, as competition is unrelieved and prices are being cut. Galvanized sheets can be bought in South Wales at £15 10s ($66.60) to £15 12s 6d ($69.37). A slight improvement is reported in tinned sheets, another branch of manufacture which serves the motor industry.

France Loses Trade with Fall of Mark

European Staff Special

Office of THE IRON TRADE REVIEW,
224 Rue de Rivoli,

PARIS, July 14.—The most important event influencing the French iron and steel market in the past few days was the great fall in the German exchange. The mark,

Franc—$0.08

which for some time has been fluctuating around 3.5 centimes to the franc is now quoted at 2.4 centimes, the lowest point ever reached. The result was not felt immediately as regards transactions in iron and steel between France and Germany as either a fixed rate of exchange is agreed upon for a given period or prices are quoted on a sliding scale. However, with the

mark at present levels it seems improbable that Germany can continue to buy heavily in France. Inquiries from Germany are still numerous but the number of orders has fallen off to a marked extent. On the other hand, the rapid fall of German exchange will probably be accompanied by an increase in prices of all commodities, in which case the buying power of that country will enable it to again come into foreign markets for raw products. The French franc has also dropped considerably and the high cost of sterling exchange is rendering English competition in France more difficult.

Domestic business in the French market continues active. Bookings in several plants have fallen off, but this is due to the fact that new mills are reopening at Micheville, Louvroil and in the Haute-Marne region, and a number of furnaces have resumed operations in the East. At present 93 furnaces are blowing in France, representing 40 per cent of the total number of stacks; 61 furnaces are being repaired or reconstructed, according to latest information.

The price of French furnace coke has been raised to 118 francs ($9.45) per metric ton in the Paris region, reparations coke still being quoted at 93 francs ($7.45). Deliveries from the Ruhr have been satisfactory, but with French production increasing some anxiety is felt as to how long the present sources of coke supply will be adequate.

The volume of business on foundry pig iron is decreasing and prices are following suit. No. 3 chill-cast iron has been offered as low as 207 francs ($16.60) per metric ton, f. o. b. Lorraine furnace. Export prices for Germany are also dropping on account of the depreciation of the German mark. In the northern district, producers are protesting against the prices made by the Societe des Cokes et Hauts Fourneaux for furnace coke. The market for hematite is improving, since English competition has become less agressive with the rise in sterling exchange. English hematite is now quoted at 315 francs ($25.20) a ton, f. o. b. French port, and French furnaces are meeting this price.

A slight decrease in activities is noted in the semifinished department. However, several orders for export have been taken and prices are firm.

The price of merchant bars has been readjusted downward. Quotations now range around 420 francs ($33.55) per metric ton as compared to the old price of 435 francs ($34.75). Plates and sheets are somewhat easier.

Belgians Book 750 Cars for Argentina

European Staff Special

BRUSSELS, July 14.—The Belgian iron and steel market has been dull during the past week. New orders are scarce and the tendency of prices is downward. Many plants are planning to shut down soon to take inventory. Producers and buyers are pursuing a conservative policy. Mills which have well filled order books are not willing to commit themselves on new tonnage at present low prices. Buyers are anticipating further reductions.

The export market is maintaining a fair degree of activity. A Barcelona firm has ordered about 1000 tons of plates, sheets, beams and small shapes. A heavier tonnage would have been ordered if stocks had been available. The Argentine republic has awarded the order for 750 cars for Patagonia to a Belgian firm. Haine Saint Pierre have obtained the order for 130 cars for the Buenos Aires harbor.

Franc—$0.08

Labor conditions are still unsettled. In the Ghent region employers have signified their willingness to resume operations if employes will accept an immediate cut of 10 per cent but they have refused the offer. Labor syndicates and producers are still negotiating, but nothing tangible has resulted.

The pig iron market is dull and prices are going down. No. 3 foundry is now quoted around 220 francs ($17.60) per metric ton. The steel department is more active and prices are being maintained. Blooms are quoted at 310 francs ($24.80) to 315 francs ($25.20) and billets, 320 francs ($25.60) to 325 francs ($26), basic bessemer quality. Rails are offered at 400 francs ($32) per metric ton; standard beams at 380 francs ($30.40) as compared to 375 francs ($30) for export; merchant bars, 405 francs ($32.40) to 410 francs ($32.80), with a concession of 5 francs ($0.40) a ton for export business.

Galvanized sheets and specialties are in good demand and orders are being obtained from Holland. Basic bessemer polished sheets are offered at an average price of 1000 francs ($80) per metric ton, with an extra of 100 francs ($8) for open-hearth quality.

Wire nail mills are still closed on account of the strike and American and German mills are supplying the demand. The tube department is showing signs of renewed activities and several export orders were taken.

German Output Low; Prices Up Again

European Special Service

DUSSELDORF, Germany, July 12.—As a result of increases in wages and fuel, prices were advanced about 31 per cent, effective July 1. This brings blast furnace coke to 1784 marks ($4.10), and foundry coke to 1851 marks ($4.25), per metric ton, ovens.

Substantial increases have been made in pig iron prices. Westphalian hematite has been advanced 595 marks ($1.36) making the present figure 8265 marks ($19) per metric ton, Oberhausen. Westphalian Foundry No. 1 is higher by 654 marks ($1.50) now being quoted 7215 marks ($16.59), Oberhausen. Luxemburg foundry No. 3 is advanced 642 marks ($1.47), making the selling price 7075 marks ($16.27) at Luxemburg furnace. Siegen steel-making pig iron is increased 595 marks ($1.36), the new selling price being 7920 marks ($18.21) at Siegen. Siegen spiegeleisen is up 690 marks ($1.58) to 8925 marks ($25.52), Siegen. The advance in 80 per cent ferromanganese is 1285 marks ($2.95) bringing the selling price to 17,855 marks ($41.06). Fifty per cent ferromanganese is advanced 1428 marks ($3.28) to 16,698 marks ($28.40), and 10 per cent ferrosilicon is increased by 1070 marks ($2.46) to 10,120 marks ($23.27). The last three quotations are f. o. b. Oberhausen.

Mark $0.0023

Prices for rolled products have been fixed as follows, the July 1 figures being compared with those of June 20:

	July 12		June 20	
	marks		marks	
Ingots	8520	$19.59	7960	$24.67
Billets	9320	21.43	8670	26.87
Wire rods	9660	22.21	8965	27.79
Sheet bars	9910	22.79	9190	28.48
Structural shapes	11290	25.96	10460	32.42
Merchant bars	11470	26.38	10640	32.98
Plain wire	12340	28.38	11470	35.55
Bands and strips	13030	29.96	11590	35.92
Ship plates	12860	29.57	11980	37.13
Plates, 3-5 mm.	14610	33.60	13570	42.06
Sheets, 1-3 mm.	15710	36.13	14450	44.79
Sheets, below 1 mm.	16490	37.92	15060	46.68

The sudden and heavy fall in the value of the mark is expected to lead to substantial increases in prices of all commodities.

Pig iron is scarcer. While production steadily decreases there is a corresponding growth of imports. Semifinished products are scarcely obtainable except from foreign sources, while all rolled products are in great demand. Manufacturers are reluctant to negotiate sales, however.

Workmen had an increase of wages amounting to 30 per cent on July 1 but they complain that in consequence of the fall in the value of the mark the cost of living has disproportionately increased.

The Cranberry furnace, Cranberry, Tenn., which is being thoroughly overhauled, is expected to be put in blast on copper free low-phosphorus iron in September.

Trade Obstacles Fail To Chill

Reviving Business Not Likely To Experience Permanent Setback from Present Checks—Third Quarter Steel Earnings Measure Recent Improvement of Industry—European Situation Now Holds Out More Promise

BY JOHN W. HILL, FINANCIAL EDITOR

THE business situation continues under the cloud of the nation-wide industrial crisis. The crippling effects of the fuel shortage and the impaired transportation facilities are becoming increasingly apparent. Yet there is nothing dismal in the outlook. When conditions get too bad for endurance in this country a way is always certain to be found to correct them. It has been apparent that such would be the case this time. For that reason, as grave as the situation is now, there is no likelihood that any permanent injury to the business recovery will be done.

Obstacles are always looming to prevent complete attainment of perfect conditions. The present strikes doubtless will be followed by more or less serious coal shortages extending over some months and a car shortage of considerable proportions. Not only will the autumn bring extra demands for fuel movements, but the crop shipments will be under full swing and trade distribution shows no signs of abatement.

During the first six months of 1922 railroad car loadings were greater than in 1919 or 1921. The number was nearly as large as in the first six months of 1920. During that year a car shortage developed. For April, May and June, 1922, loadings of all commodities totaled 10,252,214 cars, an increase of 582,227 over 1921, or 6.02 per cent. Coal loadings, however, show a falling off of 45.18 per cent. When the movement of all freight other than coal is computed it is found the gain over 1921 was 19 per cent. This is an accurate measure of the expansion in business.

Of great interest in the steel industry have been the steel company reports covering the second quarter of 1922. Without exception the earnings of leading companies have shown remarkable gains over the preceding quarters. Profits are still below normal but the trend is distinctly upward and unquestionably the protracted red ink period in the industry is over for the present business cycle. Unfortunately the improvement is expected to be checked by developments extraneous to the industry. Not only have operations been crippled but increased outlay for fuel will raise the production cost and limit profits. As a result, third quarter earnings may not show the gain anticipated.

Events in Europe are brightening. The announcement that Germany is prepared to accept allied control of her finances paves the way for a moratorium whic his expected to be announced soon. In the meantime the problem of reparations reduction is being studied by the allied governments and some tangible and important move in this direction is more than probable. By this means only can European industrial and financial stability be achieved.

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The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	444	445	391	371	300
Cash Ratio Fed. Res. system	77.8	77.3	79.1	62.5	.....
Loan rate, 4-6 months, N. Y. (per cent)	3½-4	4	4	6¼-6½	5½-6
Aver. 20 Ind'l. shares	$92.96	$91.88	$89.77	$66.21	$78.50
Aver. 20 Rail shares	$86.31	$86.06	$83.41	$72.23	$106.50
Aver. 40 bonds	$90.45	$90.20	$79.95	$76.68	$103.50
Car loadings (week ended July 8)	713,819	876,896	846,002	636,035	*791,691
Bank debits 165 cities (000 omitted)	$8,769,383	$8,855,742	$8,985,612	$7,636,403	.....

*1920.

FOREIGN EXCHANGE (Demand)

	Normal	July 22 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.45⅜	$4.44⅛	$4.38	$3.62
Francs	19.3c	8.39½c	8.29c	8.44c	7.79c
Lira	19.3c	4.66c	7.89½c	4.64c	4.53c
Marks	23.8c	0.19½c	0.22⅝c	0.28c	1.32c

MONTHLY COMPARISON

	June	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$343,440,000	$362,590,000	$235,000,000	$71,450,000
Business failures: Number	1740	1960	1320	1336
Liabilities	$38,242,000	$44,402,886	$34,639,000	$22,723,000
Excess of exports	$74,000,000	$54,000,000	$151,208,697	$54,406,000
Excess of gold imports	$11,367,882	$5,587,339	$42,802,873	*$630,716
Bureau of Labor Price Index	150	148	142	100
Bradstreet's Price Index	131.0	129.2	115.9	100
Economist's British Price Index	4389	4372	4810	2717
Cost of Living Index	155.4	154.9	161.9	100
New incorporations	$297,557,000	$988,195,000	$675,977,000	$172,301,000
Railroad net earnings	†$60,880,000	$50,256,800	$37,081,000	$59,900,000

*Monthly average export prices. †May.

The Business Trend

July 27, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Business continues in grip of industrial crisis; settlements of nationwide strikes believed probable soon as result of government's efforts; coal shortage grows more serious; moratorium planned for Germany; European outlook better.

INDUSTRIAL ACTIVITY—Steel industry undergoes further crippling from coal strike; more blast furnaces close; general manufacturing activities checked as fuel runs low.

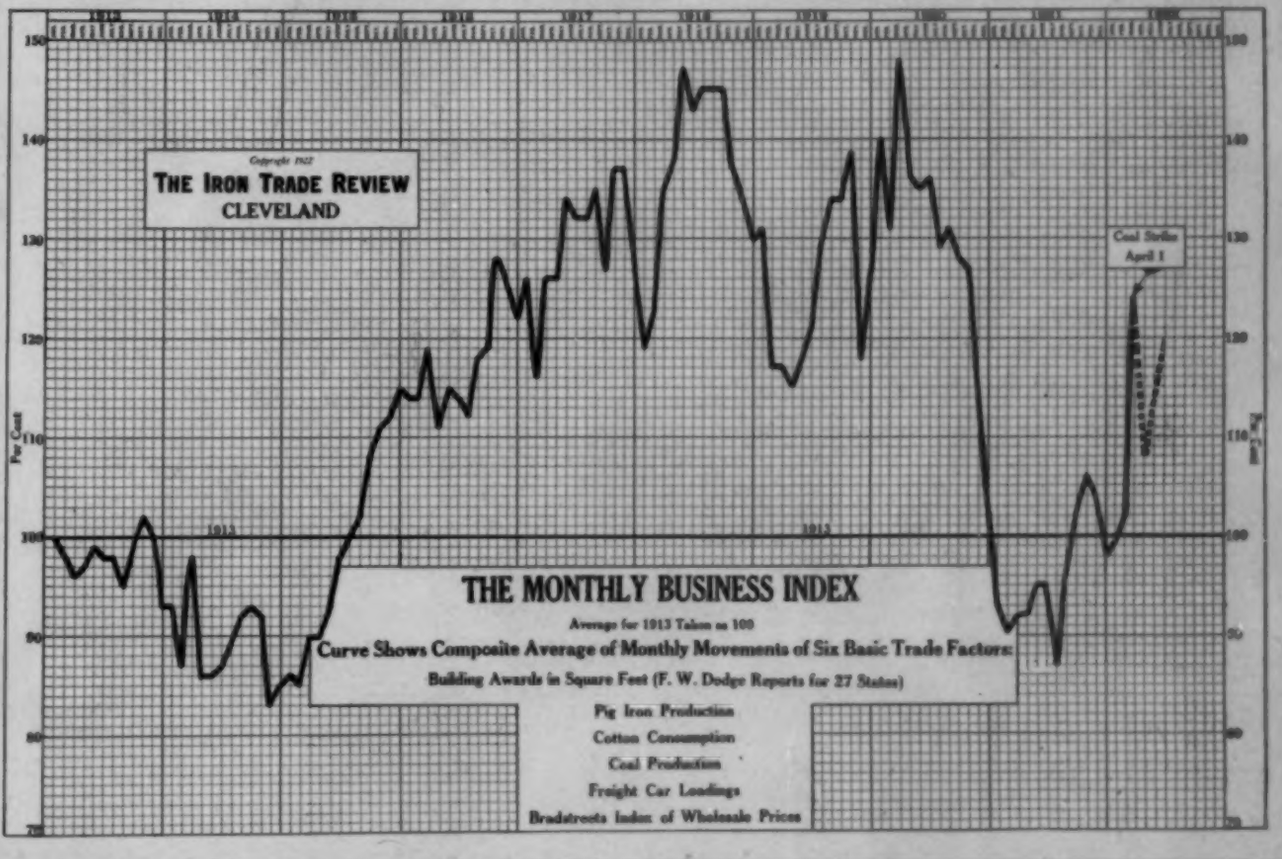
RAILROAD TRAFFIC—Shopmen's strike combined with coal scarcity impairing rail movement; sharp drop in car loadings for week ended July 8 was due to July 4 holiday.

PRICES AND FAILURES—Business failures falling rapidly as price level turns upward; number of failures in June smallest for year.

FOREIGN TRADE—American exports in June highest since last October; imports highest since December, 1920; exports excess 35 per cent over May; half of June, 1921.

AUTOMOBILES—June automobile production of 288,000 passenger cars and trucks unprecedented; gain of 12 per cent over May high record; July output declines with seasonal lull.

STRUCTURAL AWARDS—At 66 per cent of shop capacity; June structural steel awards were smallest since February; peak was reached in April.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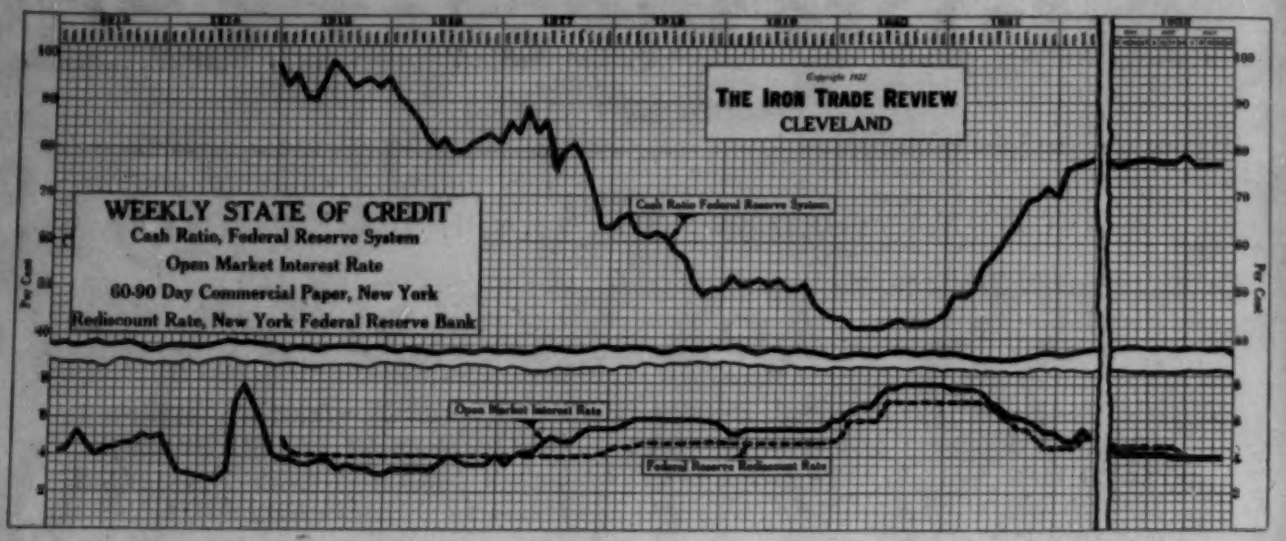
THE IRON TRADE REVIEW
CLEVELAND
Coal Strike April 1
Per Cent
1913
THE MONTHLY BUSINESS INDEX
Average for 1913 Taken as 100
Curve Shows Composite Average of Monthly Movements of Six Basic Trade Factors:
Building Awards in Square Feet (F. W. Dodge Reports for 27 States)
Pig Iron Production
Cotton Consumption
Coal Production
Freight Car Loadings
Bradstreets Index of Wholesale Prices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Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent

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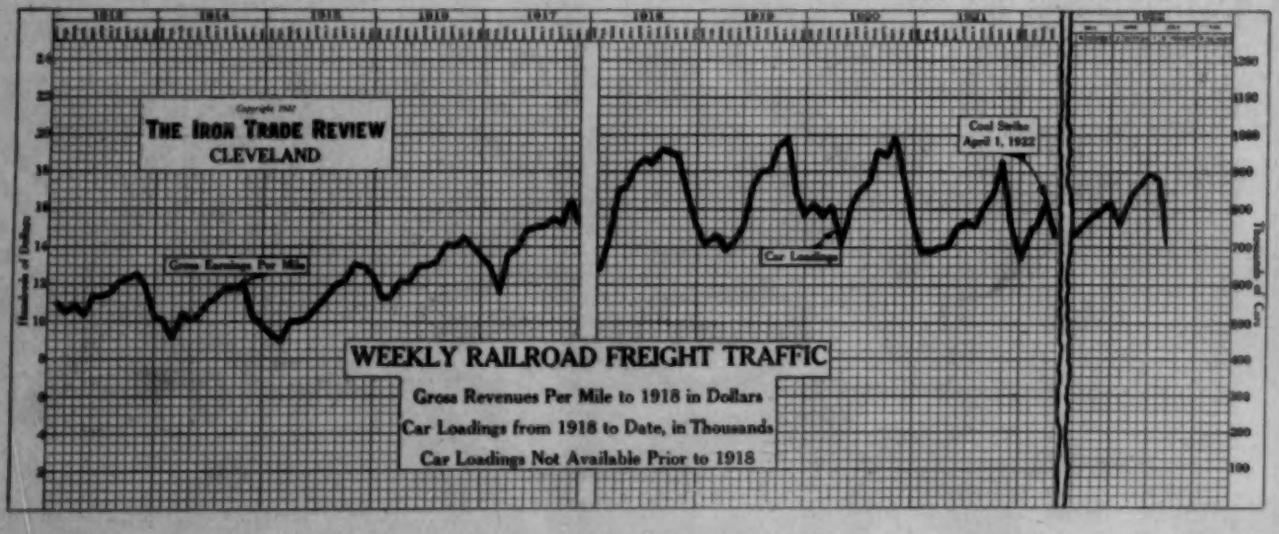
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
40 Bonds
50 Stocks
Dollars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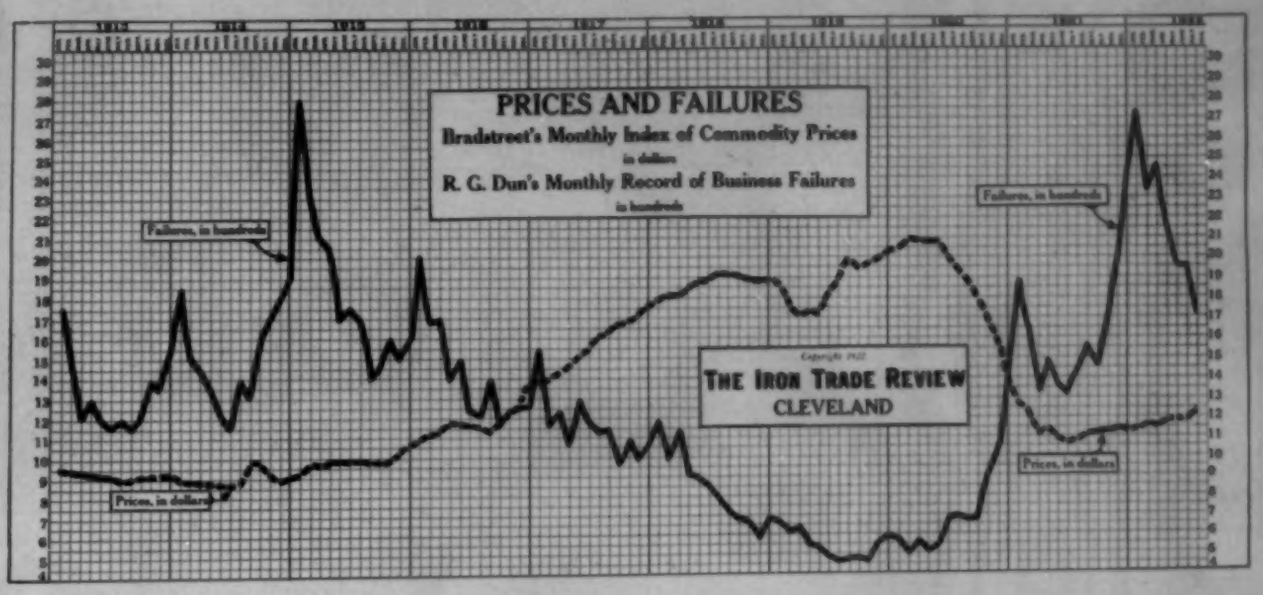
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918
Gross Earnings Per Mile
Car Loadings
Coal Strike April 1, 1922
Hundreds of Dollars
Thousands of Cars


PRICES AND FAILURES
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in dollars
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in hundreds
Failures, in hundreds
Prices, in dollars
Failures, in hundreds
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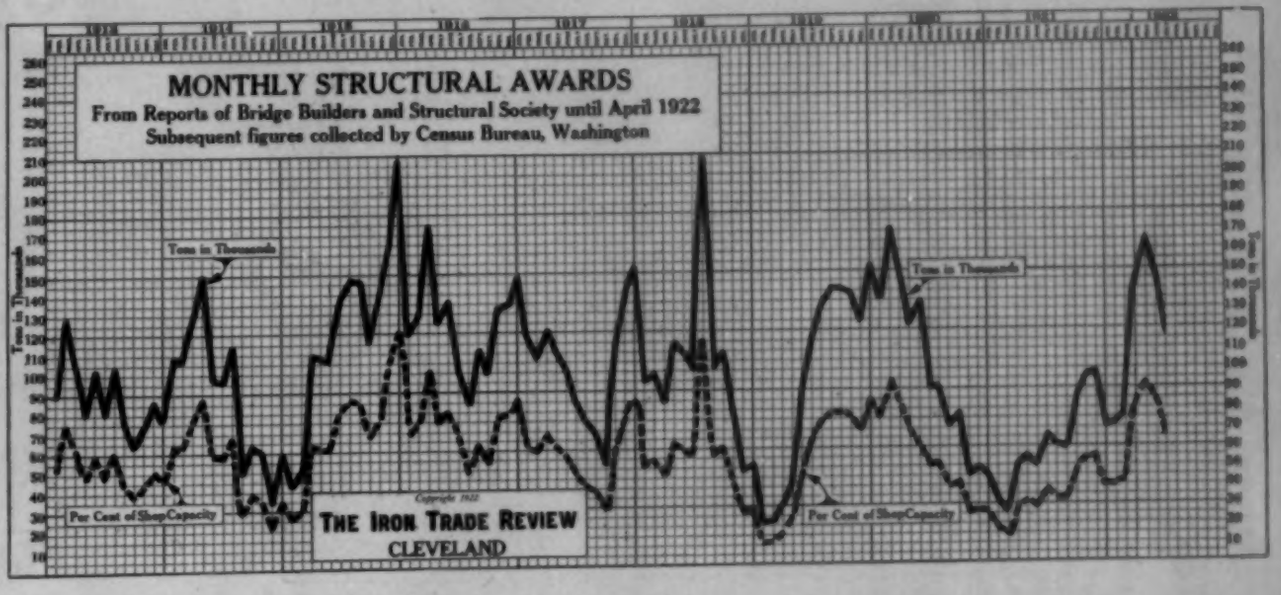
MONTHLY STRUCTURAL AWARDS
From Reports of Bridge Builders and Structural Society until April 1922
Subsequent figures collected by Census Bureau, Washington
Tons in Thousands
Per Cent of Shop Capacity
Tons in Thousands
Per Cent of Shop Capacity
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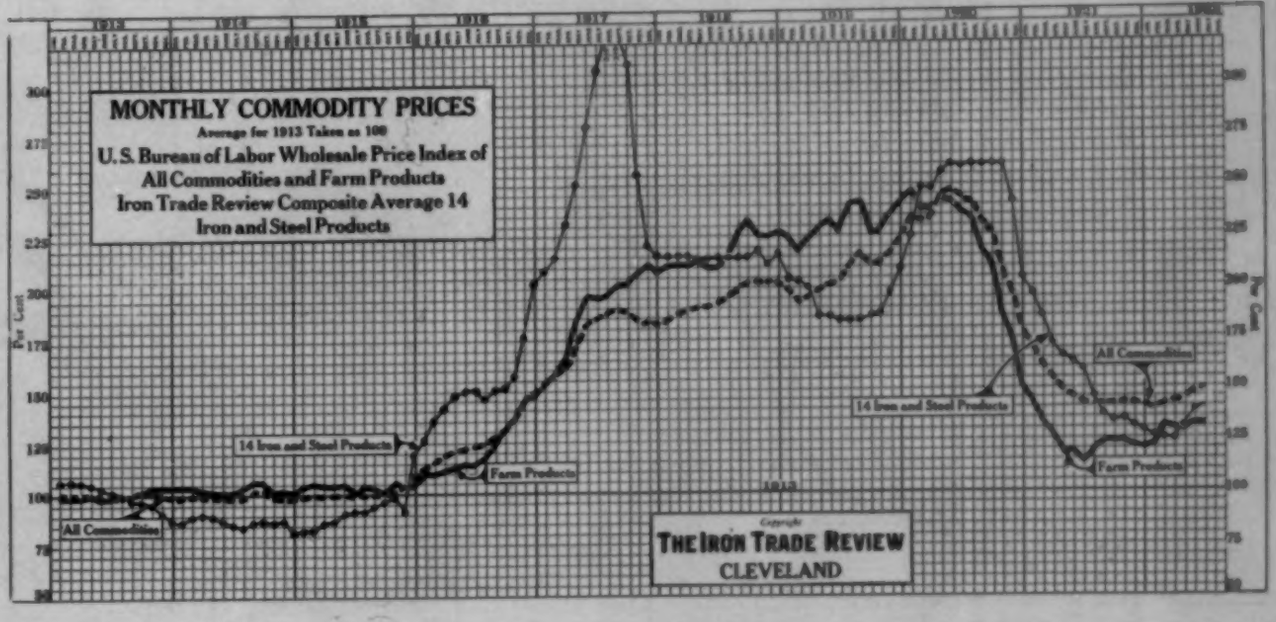
MONTHLY COMMODITY PRICES
Average for 1913 Taken as 100
U. S. Bureau of Labor Wholesale Price Index of
All Commodities and Farm Products
Iron Trade Review Composite Average 14
Iron and Steel Products
Per Cent
14 Iron and Steel Products
Farm Products
All Commodities
All Commodities
14 Iron and Steel Products
Farm Products
1913
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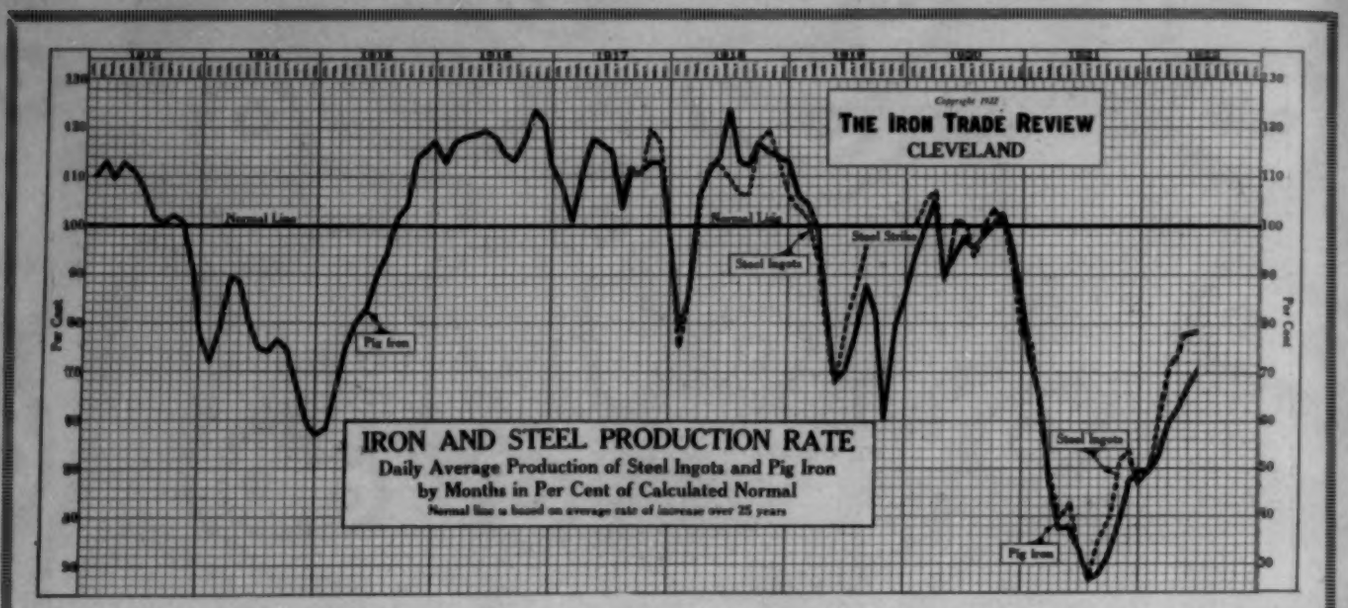
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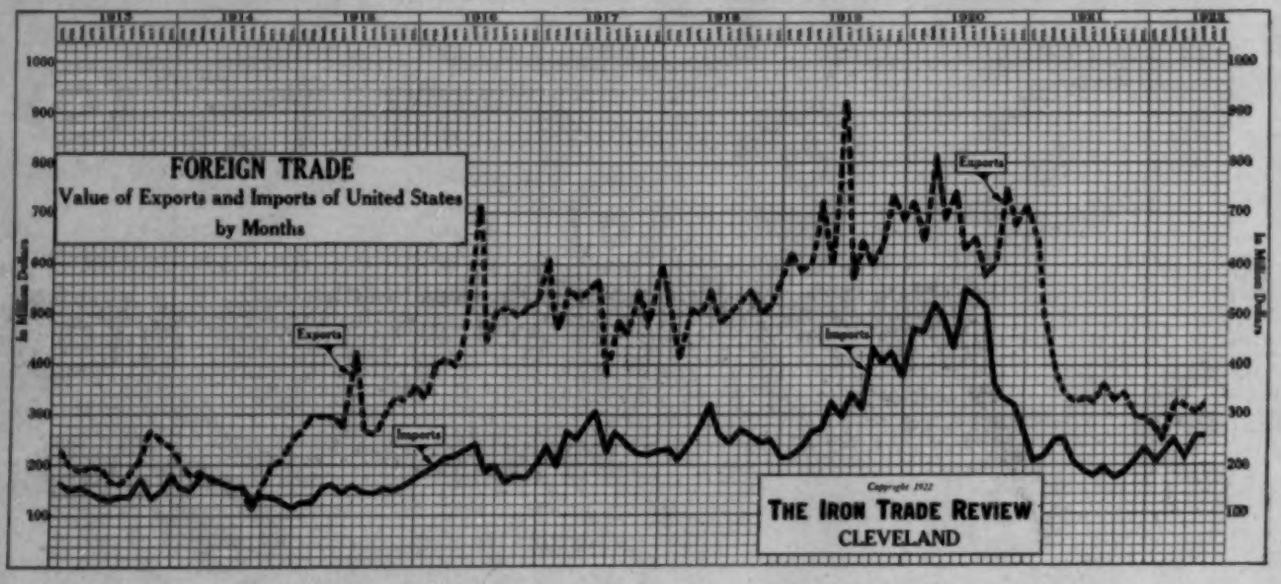
IRON AND STEEL PRODUCTION RATE
Daily Average Production of Steel Ingots and Pig Iron
by Months in Per Cent of Calculated Normal
Normal line a based on average rate of increase over 25 years
Normal Line
Steel Ingots
Pig Iron
Steel Strike
Per Cent


FOREIGN TRADE
Value of Exports and Imports of United States
by Months
Exports
Imports
In Million Dollars
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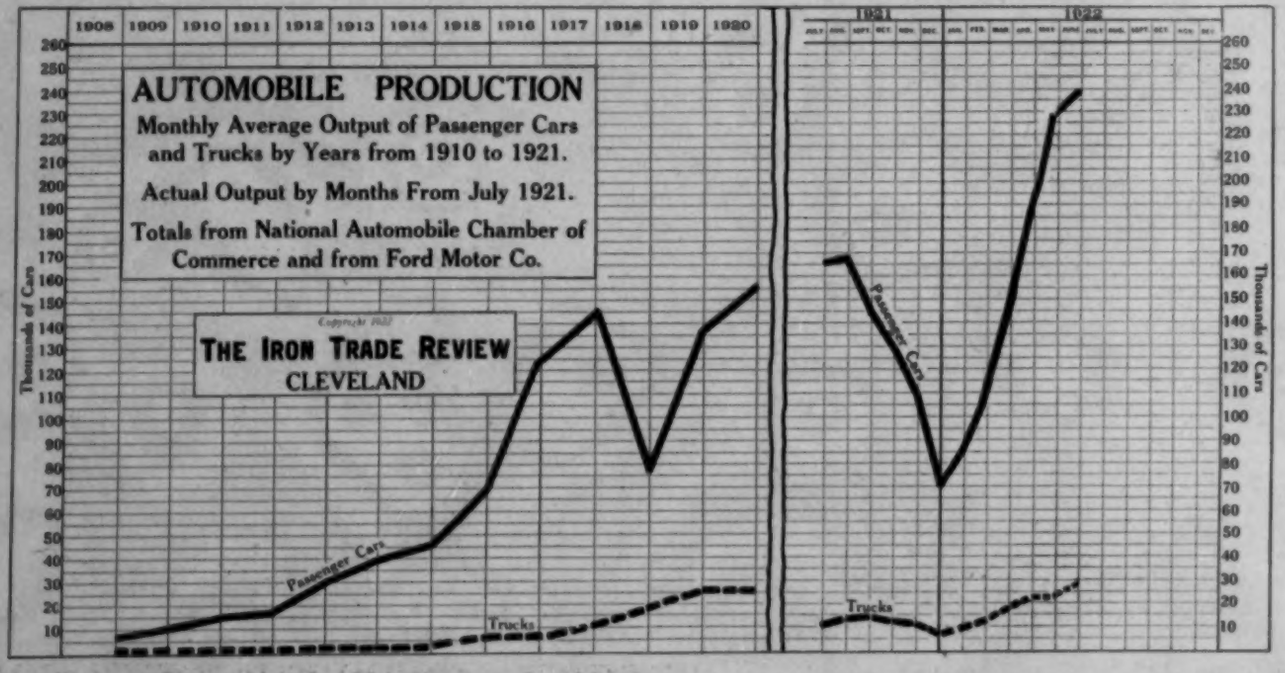
AUTOMOBILE PRODUCTION
Monthly Average Output of Passenger Cars
and Trucks by Years from 1910 to 1921.
Actual Output by Months From July 1921.
Totals from National Automobile Chamber of
Commerce and from Ford Motor Co.
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THE IRON TRADE REVIEW
CLEVELAND
Passenger Cars
Trucks
Thousands of Cars

Carnegie's Vision Still Unfolding

Impress on Industry of Unmatched Genius of Scotch Steelmaster as Seen by Associate —Men and Events of 40 Years of Steelmaking Appear in Retrospect— A Look to the Future Growth of Steel

BY H. P. BOPE

WHEN the writer entered the service of Carnegie Bros. & Co. at Pittsburgh in the fall of 1879 the country was recovering from the effects of the panic of 1873. Iron, for but little steel was being produced then except in rails, had reached unprecedently low figures. Structural shapes and plates had been sold at 90 cents per 100 pounds, and one sale of bars for agricultural implements had been made by a Pittsburgh interest at 82½ cents per 100 pounds, delivered Chicago.

But specie payments had been renewed as of Jan. 1, 1879, and the business of the country was responding to the stable condition thus established. The steel output of the country for that year was 1,247,333 tons of ingots, of which rails alone took 441,000 tons. Today the full capacity of all the steel plants in the United States is 55,000,000 tons.

The prominent men in the business, and there were "giants in those days," were the Carnegie brothers, Andrew and Thomas, Henry Phipps, Henry W. Oliver, B. F. Jones, George M. Laughlin, James I. Bennett, W. H. Singer, W. Metcalf, James Park, John W. Chalfant, of the Pittsburgh interests; Powell Stackhouse of Cambria, David Reeves and George Gerry White of the Phoenix Iron Co.; Linderman and Fritz of Bethlehem, William Chisholm of the Cleveland Rolling Mill Co., Fayerweather of the Passaic Rolling Mill Co., and many others less prominent, some of whom since have made a name and a record for themselves.

First Pool Is Formed

In the spring of 1880 was organized the first association for the regulating of prices which was the forerunner of the modern pool. This was for structural materials, and for plates and bars used in connection. The price was fixed at 1.25c per pound, an advance of $7 per ton over the low panic figure. It was accepted by the trade with cheerfulness because it insured stability of the market, and as demand was increasing, everybody was satisfied.

The introduction of the bessemer process in 1872 for rail production was the real beginning of the steel business in the United States. While rails had been manufactured in this country, a large tonnage was imported. These were mainly the doubleheaded iron rail which when one head was worn could be turned over and used again. The bessemer process largely increased production and reduced cost so that the price fell from $160 per ton to $60. Railroad building thereby was greatly stimulated. By 1875 the manufacture of steel rails had passed in tonnage that of iron rails which thereafter steadily decreased until the vanishing point was reached in 1912.

With the revival in business in 1880 there began urban development to the point where ground rents increased to an extent it was no longer possible to erect large buildings covering considerable areas of land. Even those already erected came to feel the pressure of higher rents and greater taxation. The then present iron sections did not lend themselves to any form other than wall construction. In 1883 Charles L. Stroebel, assistant chief engineer of the Keystone Bridge Works, a Carnegie subsidiary, began the designing of the modern steel sections. Naturally followed the steel-skeleton structure which enabled the builder to go up in the air where there was no ground rent. The first structure of this kind was erected in Chicago but the availability of the design was so apparent that no other form of construction has since been so widely employed.

FEW men have had the privilege of observing at such close range the play of personalities and events in the modern development of the American steel industry as Col. H. P. Bope. His 40 years of attachment in high directing positions with the Carnegie Steel Co. have spanned completely the rise of steelmaking in this country to its present preponderating scope and have brought him in intimate contact with those who have stood forth in this evolution of great power through vision, courage and genius. His observations, accordingly, are those of a participant, not a spectator. When Colonel Bope retired from the Carnegie Steel Co. in 1918 he occupied the position of first vice president and general manager of sales.

Steel Development Stimulated

The years following the introduction of the steel skeleton for building were busy ones in steel development. The acid and basic open-hearth furnaces were employed in this period to an increasing extent. The new navy was started by Secretary Whitney, under the administration of President Cleveland. The old type of arch bar construction in railroad equipment was replaced by steel underframes. New uses for steel were found due to the greater uniformity of production. Metallurgical and testing laboratories were established, and the output was placed on a more scientific basis than ever before.

The development of the tin plate industry was begun in this new period creating a demand for an output of semi-finished steel under the name of sheet bars. A general expansion in railroad building and the opening up to a greater extent of the West, making additional requirements for agricultural implement machines, all combined to contribute toward a growth of the steel industry almost beyond the vision of the keenest student.

The panic of 1893 caused a reaction in this development, but only for a short period. Then came the steel car, with its great demands for all classes of steel products. The railroads were quick to see the advantages of longer life, heavier loads and a greater number of cars per train, even though heavier rails, more terminals, the strengthening of bridges and buildings were necessitated. All this required more steel. The rail-

road world owes this facility to the genius of Charles T. Schoen, who lived to see the wonderful results of his invention.

Where Pittsburgh had been the greatest steel center, new plants came into existence in Chicago, Youngstown and Birmingham. The West became dotted with plants manufacturing sheets, tin plates, bars and specialties of one kind or another, although such manufacturing was confined largely to the district north of the Ohio and east of the Mississippi, due to water and fuel conditions more than any other contributing causes. Demand was widespread and markets were both near and far. Freight conditions at the time were not onerous.

Then came the second establishment of the gold standard, threatened by the fallacy of free silver. The steel business untrammeled by this fear looked around for new worlds to conquer. The first opportunity to appear was the great development of the oil business calling for large quantities of plates for oil well casing, line pipe and storage tanks. At the same time, due to the growth of cities, came the need for expansion in water, gas and sewage lines, calling for both cast iron and steel pipe.

Competition now became keener than ever before in the steel business. To avoid this, to cut down overhead and to create economies, came the day of mergers and consolidations. This brought to the front a new group of men, coupled with the passing of some of the great steelmasters of the past. The new names to conjure with were Schwab, Gary, Farrell, Corey, King, Topping, Reid, Grace, Dinkey, Campbell,—to mention but a small number.

Carnegie Without a Peer

Few of these men were pioneers, gifted with vision and they built on foundations already laid. None of them had the foresight,—the almost uncanny vision of Andrew Carnegie. In this respect he was without a peer, and his business judgment was seldom at fault. He was *sui generis*,—of his class alone. His mantle has more nearly fallen on the shoulders of Mr. Schwab than on those of any one else. One of the characteristics of Mr. Carnegie was his ability to select his lieutenants, who were devoted to him, in spite of his rigid discipline, and his only criterion, namely success. While all of his so-called "young partners" were not brilliant, they were substantial, knowing well the business of the department to which they were assigned. Their courage, loyalty and energy made amends for any lack of ability. However, in most of them, ability was real. Mr. Carnegie's famous pithy statements, such as—"Steel is either a prince or a pauper,"—"Take away my mills and my money but leave me my organization and I'll regain the others in a short time," and what he said of Mr. Schwab's jesting statement that we could make steel rails for $12 per ton that—"So we can, but the more we make the more we lose,"—are well known and always contained much of truth. Yet Mr. Schwab was not far wrong for rails were made as low as $15 per ton, and we did not lose much either.

Of the Carnegie group it may be said that hard and earnest workers as they were, never shirking duty, responsibility or labor, there was ever a saving and keen sense of humor among them, which lightened many a burden and cheered the way in many trials. Not the least in this respect was Mr. Schwab himself. No one who has heard any of his inimitable stories, followed by his infectious laugh, failed to respond to his jesting mood. But the man himself has carried many duties, shouldered many responsibilities, and has risen through many difficulties to a high place, largely aided by that same sense of humor which has endeared him to his friends. Few of his associates in the steel business equal him in this respect. Most of them have been more or less plodders, content to take the situation as they found it and have made name, fame and wealth, more in spite of themselves than because of themselves.

With the formation of the United States Steel Corp. came a new era in the steel business in an organization of unprecedented magnitude. On account of its great capitalization it was regarded more with fear than favor. Independent manufacturers regarded it as possible for them to be put out of business, and there is little doubt that had it desired to exercise the great power it possessed, due to its capital, the diversity of its products, the locality of its plants and the capabilities of its organization something of this nature could have been brought about. Its growth in the intervening years has not lessened its power.

The writer had much to do with the details of organization in the early stages of the corporation's existence. He was the representative of the Carnegie Steel Co. in the various associations in the business, and that company had by far the largest percentage of product. Mr. Schwab had been that representative up to that time. His only instructions to me when I took his place were: "Be fair. Go on the principle of live and let live. We are an experiment, and must make the country, and our competitors chiefly, understand that they have nothing to fear." I was ever governed by those instructions, and maintained a most friendly and cordial relation with my associates until our organizations were dissolved by government direction.

The corporation has been well and wisely governed ever since it came into being. Judge Gary has been conciliatory, helpful, broad in view and policy and, under his administration, the Steel corporation has met with great and well deserved success. It has stood for stabilization in prices,—remunerative, but generally not excessive. While favoring the open shop it has treated its work people with fairness and liberality.

During the great war it is difficult to see how our government could have done so well what it did do without its compact organization. The magnificent plants and the splendid output of the Steel corporation, were a guide and an incentive to equally good work on the part of the other steel makers. The history of our part and place in that war when written, will give due recognition to the unselfish loyalty, unswerving devotion to duty, and the wonderful results accomplished by the steel industry of the United States.

"Golden Age" Benefit Industry

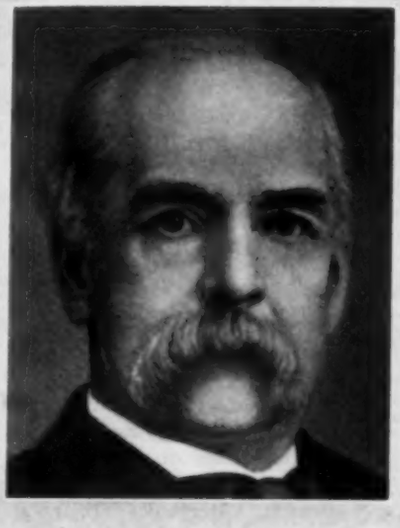
The years immediately preceding the panic of 1907 may be considered the "Golden Age" of the steel business. Business was good, the relations between the corporation and its competitors were most cordial. Prices were maintained on a stable basis and yet were not high. Customers were satisfied and contented. The general public had lost its fear of the corporation's potentiality for harm; labor troubles were few. The world was at peace, in entire ignorance of the storm that was to break a few years later, and yet unconsciously the steelmakers were preparing for the great increase in demand that was to be made upon them.

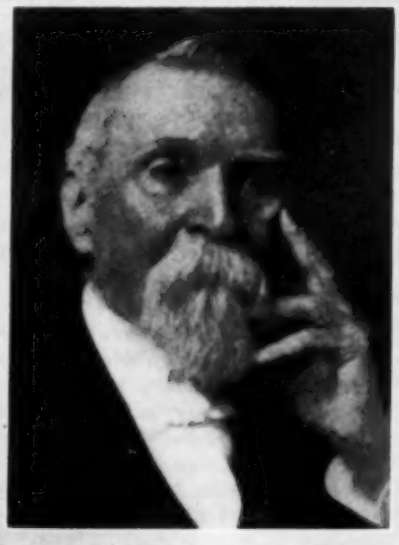
Through the influence of Judge Gary was created the American Iron and Steel institute, which has been helpful in promoting acquaintance among its members, thereby producing cordiality, which had existed but locally. By its compact organization and the dissemination of knowledge the institute has made its influence widely and beneficially felt. The great increase in welfare work belongs to this period also. While no action meets the approval of everyone, the general effect has been for good, nationalization has been encouraged, and, generally, the betterment of the workman has been promoted.

A great increase in the production of special and alloy steels occurred also in these years, due in part to the wonderful development in the automobile industry. This also helped in steel promotion.

Little has been said about the use of steel in armor, guns, forgings of all kinds, of the thousand and one uses to which it has been and is being applied. It is a wonderful history in itself and in recording what has been said, there have come many recollections of men and material which constitute a part of the history of the metal and its great increase in

Steel Leaders of Yesterday





TOP, LEFT TO RIGHT—JAMES PARK, HENRY CHISHOLM, B. F. JONES. CENTER—HENRY PHIPPS AND ANDREW CARNEGIE. BOTTOM—JOHN FRITZ, CHARLES A. OTIS, POWELL STACKHOUSE

production, which is a romance in itself. It may be well called the greatest nonhuman element in creating and promoting civilization the world has ever seen. Without it, life today would be well nigh impossible. It forms a part of almost every activity, and is as essential to luxury as to necessity. From the cradle to the grave, its uses are legion. But so accustomed are we to seeing it applied that, unless special attention is called, we are apt to overlook its value in commercial uses as well as in individual comforts and necessities.

Demand increased so rapidly it was difficult to meet it, and far more capital was required than even the wildest dreams of the pioneers in the industry had conceived.

The personal element in all this growth is interesting. There has been something in the manufacture of steel that has made *Men*. The clay may be the same, but the working of it has produced somewhat different results. Steel has been a hard taskmaster and has not always been lavish in its rewards. The banks of the streams, if not lined with wrecks, still show many of them. Where properties have been properly handled, generous have been the returns.

What of the Future?

And if this has been the past,—what of the future? In the one case we deal with facts accomplished; in the other we enter into the realm of prediction. One would think new uses for steel would be impossible to find, but the world's growth has ever brought in its train new conditions, requiring, if not new ideas, then new applications of old ones. The constant decrease in the supply of wood is creating demands for new methods and new articles to replace its use.

Changes in living conditions or the effect of new laws sometimes have a wide influence in creating new uses for metals. What, for instance, will be the effect of increasing the price of grapes from $30 per ton to $250 per ton, due to the prohibition laws? The writer can see one new use for steel which is likely to run into large figures.

Railroads will continue, as always during the past 50 years, to be large users of steel. The automobile has come to stay. Some form of tractor will be devised to absolutely eliminate the horse. The aeroplane will increase in number and practical utility. Greater use will be made of our water transportation facilities with the increase in population the necessity for reduction in living costs if our civilization will press for solution. This will mean the use of steel in barges and motive power to a far greater extent than we have known in the past. Urban development will continue, for so long as man remains the gregarious animal he is, the cry of "back to the farm" will not have great weight. Yet with that increase will come intensive farming to a greater extent and more machinery for the purpose. New facilities or the increase of the old invariably will find the demand to keep them employed.

When Mr. Schwab predicted in 1901 that in ten years the capacity of the country would be 30,000,000 tons, his pronouncement was received with some measure of incredulity. He fell but little short of the actual tonnage. Now only a little more than a decade since 1910, our capacity has increased to 55,000,000 tons.

No one laughs today at predictions of this character. They are too apt to be realized. Therefore, it may be said that the future of the steel business is assured for many years to come. The ore supply is inexhaustible if there is taken into consideration the great acreage of low grade ores which can be or will be concentrated cheaply when occasion requires. Our fuel supply is in equally good condition though we may have to go farther afield for our needs. Means may have to be found to utilize the vast culm banks of the present mines or the untold tonnage of the rich oil shales of the great West and the equally great South.

Necessity Brings The Man

If there be any question of the men to do these things, to employ these resources, when the occasion arose, seldom in the history of the world did the master not appear. Widespread education and the sharp edge of necessity ever will provide the tools to continue the world's advancement. Mechanics are great but minds are greater. It was not the locomotive that invented Stephenson, but Stephenson who invented the locomotive. The Clermont did not produce Fulton, but Fulton produced the Clermont. So in all the pages of inventive history, it has been the man who preceded. And in the steel business the names of Bessemer, Fritz, Capt. William R. Jones, Monell, Gayley and a host of others stand out as inventors whose work has placed the American steelmasters far in the front of the steel industry. Thus in all the elements that make for success, for advancement, for production, —in short, for success, the steel industry is complete.

When Should Old Plants Be Scrapped?

BY FRANCIS SAMUELSON

TO TOUCH upon certain problems of blast furnace and steelworks practice—more particularly the former is the purpose of this article. The first question is one that steelmakers may be able to answer, but their answer may not be acceptable to the purchasers of their steel. The question is: To what extent should finished steel be subjected to chemical as well as to mechanical tests? Without going to the length of proposing the abolition of the chemical in conjunction with the mechanical tests, it might be possible at least to relax the severity of the chemical specifications, somewhat when the mechanical specifications are perfectly met.

This opens up the question of whether the present chemical specifications are or are not unnecessarily severe, and whether the limits for phosphorus, sulphur, copper, and arsenic in particular are or are not unnecessarily low. Arsenic and copper in moderate quantities have been shown by Dr. Stead, in his papers read before the Iron and Steel institute in 1895 and 1916, to be quite harmless in steel. Insofar as the specifications are, or may be, too low, they do or may cause unnecessary cost in working, and greatly restrict our sources of supply, giving an artificial value to certain pure materials and unduly depressing others somewhat less pure. This is a loss to the world in general, but perhaps more particularly to Great Britain which is unnecessarily debarred from using the whole of its resources in the way which is most advantageous.

Numerous problems relating to the blast furnace have been worked upon, but probably few, of them have been solved completely. The greatest problem is the question as to what extent the known deficiencies of British plants suggest a policy of scrapping and rebuilding, and on the other hand, to what extent matters can be improved with a moderate expenditure of capital. The following is an example of the sort of question that confronts us when considering the advisability of complete or partial scrapping and rebuilding of a plant. The figures are arbitrary and are in no way supposed to represent facts. They must be considered as symbols only.

Assume a plant of five furnaces making an average of 800 tons of iron per furnace per week at a profit of a shilling a ton. Assume that by an expenditure of

From a paper presented at the May, 1922, meeting of the Iron and Steel institute, London. The author is president of the institute.

£100,000 the iron can be made for 8 pence a ton less, and that 200 tons or more can be produced per furnace.

It will be assumed that it is not worth while to expend large sums of money on a new plant unless a gross return of 20 per cent is possible, 5 per cent being interest on the capital, what you like for depreciation, and the remainder being the profit that makes the enterprise worth while. This has been the rough figure the author has always worked upon when he has had such a decision to make. However, on American author demands a gross 25 per cent return. The difference would save many plants in this country from the scrap heap.

Therefore on the example mentioned above, it is necessary to make a gross profit of £20,000. The result obtained will be as follows:

	Tons
Original output	208,000
Additional output	52,000
New output	260,000

At 1s 8d profit = £21,666.

From this must be deducted the profit obtained before, which was 208,000 tons at 1 shilling = £10,400. The net result of the expenditure of £100,000 is that an additional return of £11,266 per annum is received; 11¼ per cent on the outlay, a return which is inadequate. In this country the profit on pig iron making is not large. If the profit were much larger, that would be a factor in favor of the scrapping policy.

If, for example the profit had been five shillings instead of one shilling, the yield on the additional output would have been larger by 52,000 times four shillings, which is £10,400, which would have turned the scale in favor of the scrapping policy. At one shilling profit, however, it would not pay, unless there were some object to be attained which is not expressed in the figures.

In the foregoing calculations it has been assumed that the saving, 8 pence a ton has been estimated correctly, and that it applies to the whole new output. But it may happen that the 8 pence saved by better working has been reckoned without allowing for the saving per ton in standing charges due to increased output; or it may be that not sufficient allowance has been made for difference, present or prospective, in cost of repairs and renewals between the old and the new plant. On the other hand, it has been assumed also that the increased output is a real increase. If there be no outlet for increased output, and it be only a case of producing the same amount in fewer furnaces, then the credit for increased output disappears.

All these are economic considerations. It is difficult to separate entirely the economical from the physical aspects of the good or bad working of a plant. A question in which the physical side comes more to the front is that of the best output and best dimensions of a blast furnace. Here we may find, starting from the side of low output, that there is a point at which increased output demands expenditure on appliances for mechanical charging, and starting from the side of high output, a point below which such appliances would have too severe a load factor. Between these two points would seem to lie a sort of no-man's land.

Large Output Desirable

Another question is that of the effect upon the quality of the iron of increased output per furnace. There seems to be some reason to suppose that increased output improves the silicon-sulphur ratio, but this improvement, if it exists, may be due less to the increased output than to the increased blowing and stove power that has made the increased output possible. Probably it may be taken for granted that the largest possible output is in itself desirable, and that we need not discuss the principle but confine ourselves to examining the factors that limit output.

From the National Federation of Iron and Steel Manufacturers data have been received from which it appears that after making allowance for inevitable hindrances, the actual capacity of all the blast furnaces in the United Kingdom amounts to about 12,000,000 tons, and that, seeing that we have never produced more than a little over 10,250,000. Thus we have, apart from possible improvement of plant or methods, an existing reserve of nearly 20 per cent over the maximum production hitherto attained. Out of the 278 furnaces actually workable at one time in England and Wales, of which it has been possible to ascertain the output, 115 produce under 750 tons per week, and 163 produce over that amount. The 115 produce a total per week of 56,170 tons and the 163, a total of 166,850 tons, so that it appears that not more than about one-fourth of the pig iron produced in England and Wales is produced in furnaces making less than 750 tons of iron per week.

In this country we have succeeded in getting larger outputs from our furnaces than they were designed for; but this has meant driving up to the maximum capacity of the plant, leaving no margin of reserve power for emergencies. Our usual system is to maintain a fairly constant pressure of blast, leaving it to the furnace to determine how much air it will take. We do not commonly adopt the system by which the aim is to keep up a constant volume of air going through the furnace per unit of time. Which is the better system? The constant volume system certainly requires elasticity in the blowing apparatus; that is to say, the apparatus must work normally at less than full capacity, having a reserve of power with which to deal with difficulties. Whichever system is best, little doubt exists that a considerable reserve of power is desirable.

Here, in our old plants, our troubles begin. If we increase our engine-power, we have not enough stovepower. We may add new stoves if we have room for them, but often we have not. We may raise the height of the old ones, if they are strong enough to carry the added weight but even then they are probably not strong enough for the new pressure. If we surmount the stove difficulty, we find our mains and connections are not large enough to take the increased volume of air. If by partial scrapping we get over all these difficulties, we are apt to find that our yard is not equal to the increase in traffic. So that there really seems to be no half-way point between letting moderately-well alone and complete scrapping.

The Dry Blast

The question of dry air is one that may take years to solve, the factors involved being the value of the coke saved, the value in the gas of coke burnt in other respects wastefully, and the profit in the increased production of iron.

It is said that at the Rombas works the air for the blowing engines is taken from a height by means of a suction tower, and that this air is found to contain on an average 12 per cent less moisture than the air at ground level. By this arrangement the total moisture would be reduced, but the irregularity, which is the most objectionable factor, would remain. In America the low value of coke seems to have retarded the extended use of the costly apparatus required for drying the air; in this country the small average profit on pig iron has had the same effect.

Blast furnace managers are agreed that the chief advantage of dry air is the greater uniformity it imparts to the conditions of working. Uniformity is a great factor in economy. As a rule regularity of working means, good working; certainly irregularity means bad working, and bears especially upon coke consumption. It is impossible to follow closely a furnace working irregularly and give it always exactly the coke it requires; moreover, any additional coke charged takes time to produce effect, and consequently the furnace must have on the average more coke than its average requirement to be on the safe side. Any variations in quality of ores, cokes, or other materials charged into the furnace will have a similar detrimental effect on economy.

It is necessary for most blast furnace owners in this country to try experiments with ores, as otherwise they cannot make

the best use of the resources available to them. It is unfortunate that they have one of the worst possible instruments with which to make their experiments, which must be on a large scale. The experiments are costly if the effects are not good, and uncertain as to the results obtained on account of the difficulty, of isolating the phenomena that govern the working of the blast furnace.

A most important matter in a blast furnace plant, is balance, or proportion of parts. The furnace should be capable of an output corresponding with the capacity of its charging apparatus, and vice versa, its engines should be capable of supplying the maximum amount of air demanded by the furnace; the stoves should be capable of heating that air under all normal circumstances; and all mains, submains, valves and passages should be capable of passing the maximum amount of air required without undue friction, though their maximum dimensions will be governed by considerations of cost and of radiation losses. But even if it is possible to attain such a perfect balance, it will be impossible to preserve it always in its perfection by reason of the continual modifications of practice that progress and changing conditions are bound to cause. Therefore, it is advisable to allow a little margin. The problem in this case is to find the mean between an extravagant provision for an unknown future and too close a cutting down to the limits of presently visible needs.

Allow for Future Expansion

Above all it is desirable to have plenty of space and plenty of land. It is the worst of economies to stint a new enterprise in the matter of land. Land is the most necessary and the cheapest part of the plant. As a rule a new works will not be built where land is costly, because that generally means that the neighborhood is already over crowded; but an old company may have to buy land at a high price. Supposing your land costs $5000 an acre, or even five times that price, how much plant can you put upon it for a similar sum? Moreover, land costs little or nothing for depreciation and nothing for repairs.

There is no more vital problem than that of the future of British ore supplies. The author has counted 58 names of imported ores that have been tried of recent years in the Newport furnaces. The principal foreign sources of supply for British furnaces at present are the Bilbao ore field, which is of much less relative importance than formerly, the best ore having become scarce and the average level of quality having fallen considerably; Scandinavia, where we are liable to keen competition from other nations; parts of Spain other than the Bilbao district, the ores being variable in quality, not on the average as suitable for our purposes as were in their best days the Bilbao ores; North Africa, that is to say, Algeria, Tunis, and Morocco, where there are some very good ores—some that, while not individually perfect, are complementary one to another and can be mixed advantageously, and some that while useful cannot be considered of high class. The total supply of these districts is, by no means inexhaustible.

It is not likely that we shall get much ore from Russia, as when she recovers her economic position, she is likely to consume it herself, and in any case Central Europe seems a more likely field than Great Britain for her exports. No other European countries seem likely to supply us with ores in any considerable quantity.

Newfoundland Ore for England

Large quantities of a medium grade phosphoric ore is found in Newfoundland. This ore has not hitherto been imported into Great Britain on a large scale. It seems probable that it will in the main be consumed on its own side of the Atlantic, though there are indications that it may be brought into this country and into Germany in larger quantities in the future.

We may expect the United States to consume its own enormous supplies. The ore of Chile, so far as known, is rich but refractory, and is more likely to continue to be used in the United States than to be brought to this country. Brazil has vast supplies of ore of the finest quality, besides still vaster quantities of good second-class ores. The Brazilian ores are situated at a considerable distance from the coast, and heavy capital expenditure on railway and port works will have to be incurred before they can be brought into the market.

India and Australia are more likely to consume their own ores than to export them. Iron ores exist in various parts of Africa other than the Mediterranean countries; but so far there is no evidence to show that any of these ores are of such quality and so favorably situated that they could be exported economically to Great Britain.

France probably has at present a surplus of ores, both in the Northeast and in the Northwest. The ores of the Eastern side are hardly rich enough in iron to bear the cost of transportation to the furnaces of Great Britain, unless means can be found of reducing this cost considerably. Those of the West are richer, but even they are for the most part not sufficiently superior to our own ores to make it probable that there will be, any considerable importation of these ores into this country.

But a time may come, when the Kent coalfield is further developed, that a big steel industry will be established on either side of the Channel based on an interchange of the ores of Normandy and Brittany, and perhaps also of the eastern field of France, with the coal of Kent.

Many ores are capable of improvement by treatment either at the mines or at the furnaces, the improvement consisting of the removal of useless or objectionable matter. Obviously it is preferable that the improvement should, be made at the mines, as the cost of loading, carrying, and unloading the rejected material is thereby saved. If the treatment at the mines consists in the agglomeration of fines by briquetting, sintering, or other such processes, the product should be such that it will bear carriage without to any serious extent breaking up into fines again. But probably in most cases the cost of fuel at the mines will be such as to prevent the work from being carried out there, in which case it will have to be done at the furnaces, or possibly at a central station by some arrangement between seller and buyer.

It would be interesting if some chemist would undertake analyses of the dead-small in most of the materials that go into the blast furnace and ascertain in which cases its removal would enrich, and in which impoverish, the residue.

Announces New Deposit of Magnesite

What has hitherto been regarded as a huge deposit of kaolin, in Clark county, Nevada, near the town of St. Thomas, has been pronounced magnesite by engineers of the United States geological survey. The material has been used as a porcelain clay, and lies only three miles from a railroad connection. The so-called kaolin is stated by the geological survey to be in fact a magnesite and was deposited in a highly magnesian sedimentary bed, a part of a regularly stratified series of sedimentary beds exposed by stream channels that cut across a low ridge at the upper edge of Muddy valley. The desposit forms a chalky-looking bluff, dazzling white in the bright sunlight. The material is porcelain-white, fine grained, and massive, is remarkably free from foreign material, and has the structureless appearance an conchoidal fractures that are generally characteristic of magnesite. It is not so hard as the more typical magnesite, and it crumbles more rapidly on exposure to the weather. The deposit is included between tilted beds of conglomerate and sandstone below and shale above. The lower contact is sharply defined, but the magnesite grades up into the overlying beds.

Charts Valuable in Accounting

Many Business Organizations Are Employing Graphs in Visualizing Costs, Sales Income and Other Vital Facts—Lines Give Moving Picture of Exact State of Books—Interesting Data Revealed

BY E. F. EVANS

THAT there is an increasing demand for proper accounting methods and that the value of accounting is being realized more today than ever before cannot be denied. There may be many reasons for this. Aggresive executives are learning that a genuine knowledge of cost increases rather than decreases profits. Those who are not so well educated to this value are forced to do a certain amount of accounting for income tax purposes.

The decisions of successful men of business of today are not based upon guess work but upon a thorough knowledge of the business derived from a study of past performances and a careful consideration of present and probable future conditions. Such decisions are more likely to show results in the form of figures on the proper side of the ledger.

The foremost factor of importance in any business is a correct method of cost accounting. A bad cost system is no better than none. After this comes a method of presenting accounting results of facts. In this respect, executives differ in their requirements. Some require a detailed record of operations, while others are content with outstanding facts. The nature and size of the business affects the requirements along this line to some extent. Facts may be presented numerically, graphically and by a combination of figures and graphic charts.

All of these methods are sometimes augmented by written explanations. This is necessary when much detailed and lengthy analyses are desired. When trends and tendencies are wanted, a graphic chart is by far the best instrument of presentation. The use of graphics is not new but its use in connection with accounting data is comparatively new. Charts have been in use for many years by engineers, mathematicians and other technicians but it is probably within the 10 years that business executives have begun to realize that graphics show much more information than can be gotten from numerical statements.

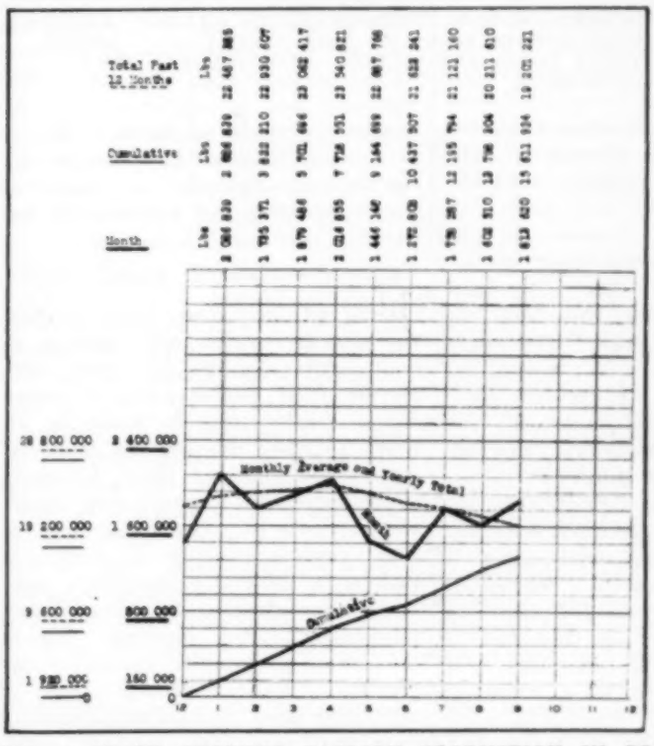
Charts also save time as they can be analyzed much more quickly and with less energy than a set of figures.

It is a well known fact that graphics were used to a large extent by the government in the recent war. Army locations were represented on maps by the use of differently colored tacks, and highways, railroads, etc., by the use of colored strings and chalk lines. In most instances the entire operations of units were directed from graphic charts of some description.

Referring to the accompanying charts beginning with number one it is seen that the curves are plotted on the vertical lines, each vertical line representing a month. At the bottom of each line will be found numbers designating the months of the year. The scales are shown at the left of the chart and always begin at zero. They are selected from a scale selection table which causes the curves to fluctuate around the 2-inch line regardless of the size of the figures they represent. By the 2-inch line is meant the line which is located two inches above the zero line.

Because of this scale selection, one

From a paper read at the June meeting of the Pittsburgh section, Industrial Cost association. The author is a consulting statistician, Pittsburgh.



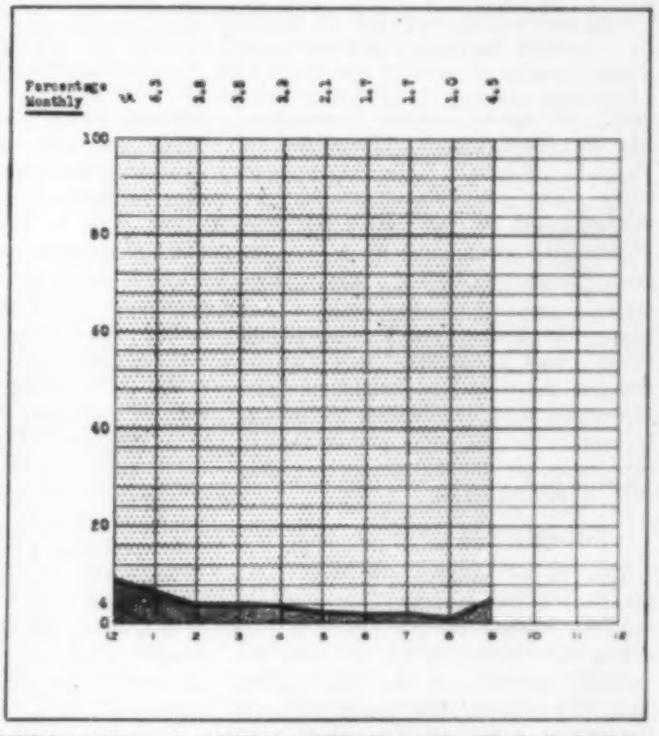


FIG. 1—GRAPH SHOWING FACTORY PRODUCTION IN POUNDS, GIVING MONTHLY AVERAGE AND YEARLY TOTAL, TOGETHER WITH THE OUTPUT BY MONTHS AND THE CUMULATIVE TOTALS. FIG. 2—THIS GRAPH PICTURES THE SCRAP LOSS OF A PLANT. THE PERCENTAGE OF THIS LOSS AFFECTS PRODUCTION COSTS

is able to compare two or more subjects, no matter how great a distance there may be between the figures. This table shall be explained more fully later. The broken and narrow curves are plotted on the extreme left scale which is 12 times the scale on which the heavy black curve is plotted. This is on account of the two former curves representing larger amounts. If they were plotted on the lighter scale they would run off the top of the chart.

It will be noted that the figures from which each curve is plotted are shown at the top of the chart. The heading of the first column is "Monthly Performance," the second column "Cumulative" and the third column "Total for the Past 12 Months". The heavy black curve shows the current monthly performance and the light curve total data to date since the first of the year at any time during the year. This curve starts at zero at the beginning of each year. The broken curve is called the "Total past 12 Months" and besides showing the total business for the past 12 months, it also represents the monthly average for the same period, that is, the total for the 12 months ending July is $19,201,221.00.

Monthly Average Is Obtained

This figure includes the first seven months of the current year and the last five months of last year. By dividing this figure by 12 we have the monthly average for the year ending July. By reading this broken curve on the lighter scale we automatically divide our yearly total by 12 as this scale is only one-twelfth of the one on which the curve was plotted. When the monthly curve appears above the broken one it means that particular month is above the average for the past year; if below it is below the average for the past year.

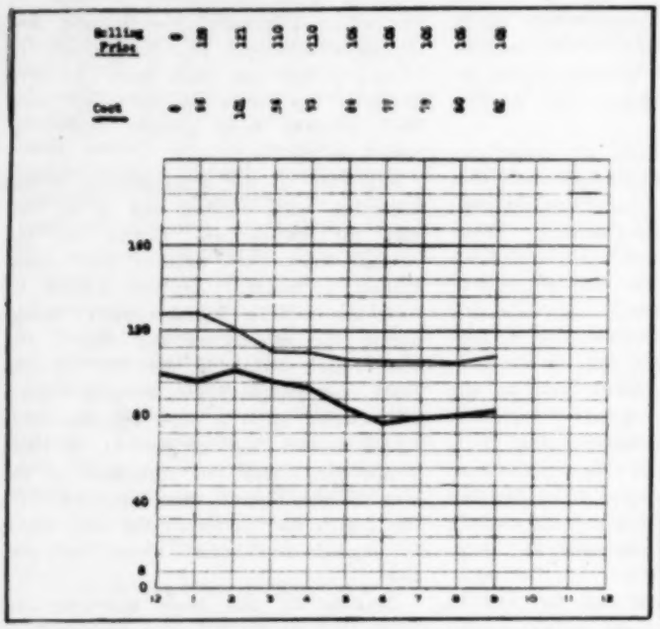
Continuous Picture Secured

If the tendency of the broken curve is downward, it shows that the current month is lower than the corresponding month of last year, and if upward vice versa. By joining these charts in chronological order a continuous picture of the subject for any number of years can be obtained. By superimposing them and holding them between you and the window or light you can efficiently compare one year with another.

The chart in Fig. 3 covers the cost and selling price of the same product covered by Fig. 1. The heavy line represents production cost and the lighter the selling price. The space between the two is the margin of profit. This makes an excellent comparison between production and cost of production. Comparisons covering a fair period of time usually reveal inconsistencies in cost figures. Cost often increases when production increases. All conditions being equal, this is wrong, yet it happens frequently. Charts will not reveal the cause of irregular tendencies, but they flash a danger signal which, oftentimes, will be entirely unnoticed in a numerical statement.

In the manufacture of the product shown in Fig. 2 there was a scrap loss, that is, a certain amount of imperfect material was produced along with the perfect product. This factor is controllable to a great extent. One to 2 per cent is what we might call a legal loss. The percentage of loss affects the production cost, hence the reason for this comparison.

It was found that new and inexperienced men would cause the loss curve to increase so the labor turnover was plotted and regularly compared with the percentage of loss. The solid line in Fig. 4 represents the yearly rate of turnover for each month and the dotted one, the average yearly turnover for the past year. It is customary to reduce all turnover figures to a yearly basis so all industries are comparable. Payrolls are made up weekly, biweekly and semimonthly and monthly.



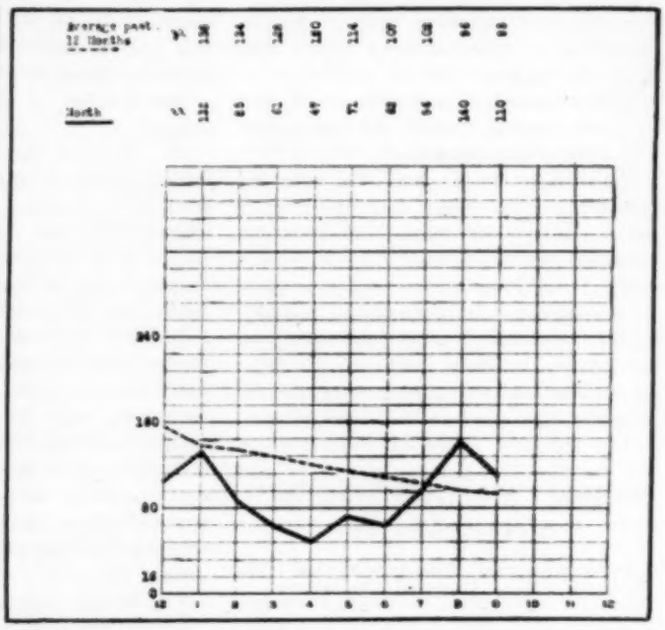


FIG. 3—PRODUCTION COSTS AND SELLING PRICES ARE FACTORS LENDING THEMSELVES TO GRAPHIC ANALYSIS. CHARTS DO NOT REVEAL CAUSES OF WEAK SPOTS, BUT FLASH DANGER SIGNALS. FIG. 4—THIS CHART DEPICTS THE YEARLY RATE OF LABOR TURNOVER. PRODUCTION COSTS ARE VITALLY AFFECTED BY THIS MANUFACTURING PROBLEM

Figure Comparisons Impracticable

Here we have four subjects which are directly related, and affected by each other. To get this same comparison from figures alone is impossible. Furthermore, to make or attempt to make this analysis from figures would consume time. A correct visual impression is gained from curves almost instantly. When one tries to draw conclusions from a column of figures, he generally finds that, more or less unconsciously he draws a mental picture of their meaning. This is the reason progressive executives appreciate a moving picture record of their industrial operations. The vital facts and comparisons stand out plainly and cannot be overlooked. If a

(Continued on Page 248)

Planning a New Malleable Shop

A Suitable Site, Properly Ventilated and Lighted Buildings, Efficient Equipment Coupled with a Policy of Operation which Considers Comfort of Workmen Are Factors Affecting Layout of Malleable Foundry

BY ENRIQUE TOUCEDA

DURING the past year numerous inquiries which pertained to the practical details of malleable castings manufacture have been received from France, Belgium, Italy, Australia, and Japan. The author has received visits from engineers from abroad who have seemed greatly interested in the practical rather than the metallurgical details of this industry. It is the author's thought that if he took as a guide the character of these inquiries and the various questions that have been asked him by these visitors, he would not miss the ground that members would prefer to see covered, rather than attempt to enter into an academic discussion in regard to the mechanism of graphitization and other controversial matter concerning which so much has been written of late, or in dwelling on other strictly metallurgical details that have been so ably covered by many others, and particularly by H. A. Schwartz, whose series of articles on the subject appeared in 1921 in THE IRON TRADE REVIEW.

Starting with the lay-out of a malleable plant, the details of which should have serious consideration, it is obvious that its correct plan will be dependent upon the plant capacity specified, and the shape of the building site. In connection with the latter, high ground should be selected, if possible, while low ground that is naturally wet and cannot be successfully drained should be shunned as worthless, for if annealing ovens are erected in such a locality annealing difficulties will prove to be perpetual. Whether the plant is to consist of one or various working units, and even if the raw materials are to be handled by a crane, it is desirable that each kind be stored as near to the metallurgical apparatus in which it is to be used as is possible. It is advisable that the sidings where the raw materials are to be discharged, the tracks be elevated on trestles of a height and length that will admit of the rapid and cheap discharge of car contents. In storing the molding, face and core-sand, a saving will result if the roof of the buildings in which they are to be placed is flush with the tracks which may be elevated on the trestle, in order that the cars can be discharged directly through roof openings into the building or sheds.

Irrespective of the size of the plant, the various departments in each unit should bear such a relation to each other that the product from the start of operations and at each step in the process should be continuously approaching the shipping room in the most direct manner possible. Economy in construction will result if each separate department is dimensioned strictly on the basis of providing little room in excess of that which will occasion congestion when running at maximum capacity. Experience has convinced the author that, in rare instances only, are malleable-iron plants ever run at maximum capacity, for when business is booming labor is scarce and inefficient, and when labor is plenty and men are willing to do a fair day's work, there is a dearth of business. Therefore some crowding in the various departments can be tolerated at times that prove exceptional. The one-story, straight line plant with capacity of 25 to 35 tons of castings per day with core room and shipping rooms at extreme ends, and foundry, hard-iron mills, trimming, grinding and sandblast room, annealing department, and soft mills in between and located in the order named, will be found convenient. This may be arranged to permit considerable economy in construction, while admitting expansion. The character of building unit, very popular at the present time in the United States, is the one-story steel skeleton type with curtain walls, brick pilasters, and concrete foundations. This has either a saw-tooth roof, or one of usual construction with sufficient pitch, a monitor running the full length of the building with window sashes hinged at the top to swing inward, and sashes in the curtain wall pivoted at the center. The roof covering commonly is of slate, slag, fabricated cement-asbestos tile, or other fireproof material. The one-story building of this type with either style roof possesses many advantages, in that maximum lighting is assured, ventilation is facilitated, and fire risk minimized.

One of the most important items to be considered is that of efficient ventilation, particularly in the foundry building and core room. Without a constant supply of fresh air, energy of body and alertness of mind are gradually deadened as the day progresses. When activity and vigor are lowered the effect always is noticeable in increased foundry loss on late heats, while the hazard, due to accident, is augmented.

For effective ventilation dependence should not be placed wholly upon the monitor; but it should be supplemented by well-designed ventilators, positioned in such a manner that a steady discharge of air is assured.

Efficient and uniform heating of the foundry proper is a problem replete with difficulty, owing to the variable conditions that must be met. During the night the natural fall in temperature, coupled with the condition brought

WHEN the author of this paper was designated by the American Foundrymen's association to prepare and present the second exchange paper offered by that technical society to the Institution of British Foundrymen, an obligation was incurred. Malleable iron casting practice abroad differs widely from that which has been developed from the same beginnings in America. Mr. Touceda, with this fact in mind fulfilled the obligation and prepared a masterly discussion covering many intimate details which will be of interest to his associates on this side of the water, as well as to those foundrymen who serve the industry in other lands. The accompanying article presents only the first section of the paper, which deals with the factors influencing the selection of a foundry site, the design of buildings and equipment and the general plan of operation.

Abstracted from the exchange paper presented at the Birmingham conference of the Institution of British Foundrymen, June, 1922. The author, Enrique Touceda, Albany, N. Y., is consulting engineer for the American Malleable Castings association.

about by wetting and cutting the sand, produces a clammy dampness, hard to remove by the time the men report for work in the morning. In contrast to this condition, is the state of affairs that exist after a heat, when the air is filled with hot steam and a great amount of heat is radiating from the castings. Some foundries still use the salamander, which while cheap to install is expensive to run, takes up space of value, interferes somewhat with crane service, and occasions loss of time due to the men congregating around it if they feel slightly cold. One of the best and most approved systems is to force warm air into the building by a blower system through pipes properly spaced to yield uniform heating. Live and exhaust steam from the power house or from a separate steam source designed for heating only, or from such a plan supplemented by steam from waste-heat boilers, is used in some plants in radiators hung in such a manner as to be out of the way but as near as practical to leakages of cold air to heat this air as it filters into the building.

The author has seen many plants where a waste-heat boiler-installation has proved to be a mistake. A waste-heat boiler has not been designed to date in such a manner that after furnace operations have ceased it can be hand-fired economically. In running but one heat per day, any saving would be offset by the huge amount of coal required to make steam for the remainder of the time, when power or heat was required. If the boiler is allowed to cool and electric power and steam for heating derived from a small auxiliary heating plant substituted, the maintenance cost will prove disastrous. The scheme works out in other cases, especially where the cost of electric power or coal is high; where two heats per day are run from the same furnace; where one boiler is used in common with two furnaces, and particularly when a great amount of power is required for sand-blasting purposes. Preference should be given to that type of boiler least affected by quick changes in temperature.

Floor Is Dangerous

The foundry floor is deserving of thought. Some favor the concrete floor, but the writer believes that if a vote were taken of the molders the decision would be in favor of almost any other type. The concrete floor is unquestionably hard on the feet, and dangerous in some particulars. When spills occur an eye may be lost or serious burns sustained due to the instantaneous generation of steam from the moisture on the floor surface. Serious accidents have occurred in carrying iron, through the molder slipping on the rounded particles of metal that have been occasioned by spills. Even when the floor has been properly laid, it can be ruined through carelessness in shaking out the castings too hot.

Vibration Harmful

However, the worst feature of the concrete floor is its great tendency to transmit vibration. When bumpers or vibrators are used, the probability of shaking down dirt from the cope or the cope itself is great. A floor of hard-wood blocks properly laid on a sand foundation yields better all round service, and is equally good for the gangways or, if protected with a little packing where the pots are dumped, for the annealing room. When used in the annealing room a strip paralleling the front of the oven and 6 feet wide should consist of square annealed iron plate about 18 x 18 inches with lugs on the under side, and set in concrete, or smooth granite block, set in concrete and well grouted. Molten iron has no other effect on wood block than to produce a surface char, which defects are shallow, and when present become filled and well protected by sand. The blocks should be laid in straight parallel course, with the grain of the wood vertical, care being taken to keep straight courses and close joints. All courses should break joints alternately by a lap of at least 2 inches, and should be filled with a hot, low-melting-point pitch of a consistency that will flow like water, to the end that all crevices will be completely filled. Against the sides of the building and around all foundations expansion joints should be made by placing a 1 x 4 inch tapered board on edge against the sides of the building and around foundations. The boards subsequently should be removed after the blocks are laid and rolled so that the void can be filled with hot asphalt to within ¼ inch of the wearing surface of the floor. The dirt, or clay, foundry floor is the safest, and the one that is most popular with the molder. It is comparatively inexpensive, and, if given proper attention, can be kept level and in excellent condition, while if a standard travelling sand cutter is used, there will be no danger of the floor being cut, provided precaution is taken to see that the tread of the wheels are made sufficiently wide to prevent their sinking into the ground.

The author believes that if the molder was asked what constitutes at the present time his hardest and most exacting task, if casting surface is a vital proposition, he would state, cutting sand. It is getting increasingly difficult to employ molders owing to the disagreeable nature of the work and the conditions under which the work is done, coupled with the fact that an equal wage can be earned in other occupations. After a lengthy shut-down those molders who have secured jobs in other lines generally refuse to return to the foundry on the resumption of operations. The fact is being recognized that something must be done to lighten his labor and make his living conditions within the plant favorable as far as possible, with what obtains in other industries. That the standard type of travelling sand cutter has not been more generally used is due to the fact that molding conditions in the malleable-iron foundry are different from those existing in foundries where other types of castings are made. In malleable-iron practice, molds usually are placed on the floor between heats, so it has been found impracticable in many instances to run the machine from pile to pile owing to the short time available and the confusion that would result if this was attempted. To overcome this difficulty, a cutting machine has been devised to operate as a unit with a monorail hoist, to which it is attached by two hoisting cables.

Handling Materials

The following hints may prove of value in the layout of a straight line foundry of medium capacity. A monorail crane so located that it passes from end to end of the foundry building and directly over two air furnaces symmetrically distanced as to molding space and set crosswise of the building, in combination with an electrically-driven 2 or 3-ton transfer bridge of 30 to 40-foot span that will admit of easy and rapid exit out of and entrance into the foundry, will pay for itself within a reasonable period. Through the latter arrangement the air-furnace charges can be placed on the floor space beneath the bridge at its entrance to the building, to be taken subsequently to the furnaces. Such a scheme yields fairly complete crane service to both yard and foundry, while for a slight additional expenditure the monorail can be extended to the other departments if, as should be the case, a uniform overhead clearance of at least 15 feet has been provided throughout the entire building unit.

In larger foundries it will be found that a more complete system of crane service is demanded by conditions. The travelling bridge crane service for the malleable-iron foundry differs in the majority of cases from what should

obtain in the case of the gray-iron foundry, for it is rarely used for drawing patterns or for handling finished molds. In some malleable-iron foundries, however, such as those making heavy railway work, while the requirements are quite similar, it is for a different reason. The large bottom pour ladle is now generally and successfully used for pouring molds for this class of work. The latter and former condition call for a travelling speed of from 1 to 5 feet per minute. Pouring metal through a nozzle from a large ladle suspended from a crane and passing from mold to mold necessitates careful control of the speeds. Consequently, the travelling and hoisting speed particularly should be adapted to the character of work. In the absence of a specific design of building, it is not possible to indicate the best arrangement of travelling crane and supplemental crane installation. Such details are familiar to the structural engineer, and are not as serious as those to which reference has been made, if to these be added the fact that any crane should have a positive system of mechanical brakes, have electrical equipment as simple as possible, and so constructed as to prevent the admission of dust or dirt.

The lifting magnet, used in connection with the crane, in the writer's opinion, is an indispensable accessory when the present labor situation is considered. Those who have seen men shaking out hot castings from steaming sand, need not be told that this constitutes a disagreeable task. Aside from this, when the castings are shaken out and piled, much burnt sand is left in a heap on each floor that subsequently must be collected from all the floors in use. Castings can be quickly removed by the magnet and the core wires, the cores themselves for the most part, and the chills are removed at the same time, and deposited at convenient places, from which the burnt sand can be easily and quickly taken to the dump, and the wire and chills recovered.

If the plot of ground is rectangular, a convenient layout of building is in the shape of a deep channel, one leg consisting of the foundry building, mainly, say 136 x 300 feet, 1300 to 1500 square feet of molding space per ton of castings, the square feet depending upon whether the work is heavy or light, the other leg containing, for the most part, the annealing room, say, 95 x 300 feet, while the web, a building 50 x 300 feet, connecting and opening into the two buildings that form the legs of the channel. The situation can be understood easily by reference to the arrangement of the departments as given for the straight line plant by simply considering that the straight line is bent in the form of a channel, the various departments following in the same order as in that construction. Through this design there would be a court about 70 feet wide to provide light and ventilation, and in which a wash room can be built, easy of entrance from any of the main buildings.

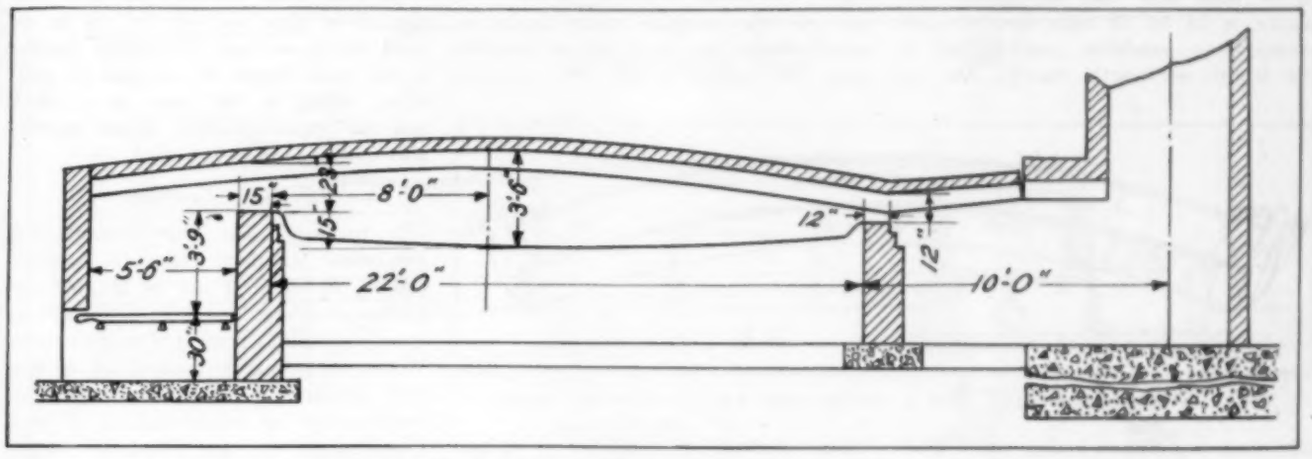


FIG. 1—RECOMMENDED DESIGN FOR A MALLEABLE IRON AIR FURNACE OF 15 TONS CAPACITY

Composition Recommended

A description of the black-heart malleable-iron process has appeared in so many papers that have been written within the past few years that the author feels certain members must all be very familiar with it. On this account a very brief explanation only will be given. The castings, as cast, whether made in the cupola, air-furnace, open-hearth or electric-furnace, must not only consist of white iron in which no trace of primary graphite exists, but in order that the finished product, after heat-treatment, be of normal fracture and superior in mechanical properties its composition must lie between certain definite limits. The white-iron composition that the author would recommend for best all round conditions, embodying facility of conversion, fluidity, shrink, static and dynamic strength, and ductility in final product, is of necessity and for obvious reasons a compromise. Such a composition is: Silicon, 0.90; phosphorus, 0.20; sulphur, 0.060; manganese, 0.25; and combined carbon, 2.35 per cent.

Later, some remarks will be made concerning permissible limits, but while at this point, the author desires to explain that the recommendations he will give in regard to both melting and conversion, are based upon works conditions and not upon what can be accomplished by a scientist in a laboratory apparatus of easy and positive control. In the United States the cupola is little used except for castings for fittings. Melting the charge in the presence of coke in the ordinary cupola, means not only high-sulphur but high-carbon. The mixture is one in which sprue and malleable scrap predominate; some steel may be used, and enough pig added to bring the silicon to the required point. The mixture as it enters the cupola will run from 0.70 to 0.95 per cent silicon; the total carbon from 2.50 to 2.75 per cent; the manganese in the neighborhood of 1.00 per cent, the phosphorus under 0.18 per cent. The loss in silicon is but little, rarely as much as 0.12 actual, the loss in manganese about 2/5 the original content; carbon will be picked up to an amount that will produce an average of 3.00 per cent in the product, while the amount of sulphur in the product will be a function of the fuel ratio, the quality of the coke,, the amount in the original mixture and the size of the scrap. The smaller the scrap the larger will be the gain in sulphur. In

the fittings examined by the author the sulphur averages around 0.25 per cent. While such iron, when annealed at a high temperature, will produce a free-cutting product, and while it is acceptable as a material for fittings, it would show an abnormal structure in sections at all heavy, while it would be low in elongation.

Designing an Air Furnace

The reverberatory, or air furnace is the melting apparatus most used for the production of white iron castings. It is, as is well known, a wasteful apparatus, having an efficiency ordinarily under 10 per cent. As numerous inquiries have been received in regard to its design the following will prove pertinent. Under the assumption that bituminous coal and forced draft are to be used and that the furnace capacity is to be 15 tons, the first dimension to establish and lay-off is the length of hearth, that is, the inside distance between bridge-walls. Theoretically this should be such that the charge will have absorbed all of the heat from the combustible gases just as these leave the hearth on the way to the stack. Such conditions are impractical, for this would imply an exceedingly long, narrow hearth with depth of metal so shallow that it presumably would be oxidized badly long before it became hot enough to pour. Therefore, to obtain practical working conditions, the distance between the bridges must be such that a proper ratio of width, length of hearth and depth of bath must obtain, the former to provide for a workable hearth-size and the latter to avoid excessive oxidation. For this capacity furnace an inside distance between bridges of 22 feet and an inside width of 6 feet 6 inches will provide a mean depth of bath of 7 inches, which will be about right.

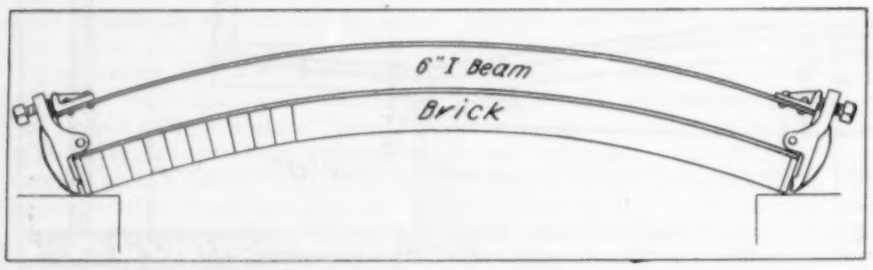


FIG. 2—STANDARD DESIGN FOR A FRAME FOR AN AIR-FURNACE BUNG

The top of the front bridge theoretically should be level with the molten metal, but if this were the case the furnaceman in rabbling the bath to hasten melting of pig still partly solid and protruding above it would splash molten metal into the fire pot. To prevent this the bridge should be some 6 inches higher than the level of the metal after the charge has entirely melted down. The top of the rear bridge should preferably be 3 inches lower than the top of the other. To lay off the hearth bottom, draw a horizontal line 6 inches below the top of the front bridge, which will hit the rear bridge 3 inches lower than its top. Draw another horizontal line 9 inches under this, and between these two lines, and limited by the bridge walls, lay off the bottom on a curve such that its lowest point, locating the tap hole, will be about 8 feet from the front bridge. This is shown in Fig. 1. The curve or slant on each side of this point should have a pitch not much more than sufficient to drain the iron from the hearth, and such that as the metal is withdrawn feathered edges of metal are not pronounced, that is, the average mean depth of metal should be as great as possible when the hearth is full, and as it is being emptied. A tendency is to get the tap hole too near the front bridge. If this is done the brick surrounding the tap hole will wear unduly, owing to the wash of the metal and slag produced by currents induced by the action of the overhead blast used to provide air for secondary combustion.

Next lay off the thickness of the bridge top which should be 15 inches. Theory calls for the level of the coal bed to be flush with the top of the bridge, but if this were done, the forced draft would blow some coal into the hearth and recarburize the bath, which it is desirable to avoid.

For the general character of coal used in the States, it has been found that if the distance from top of bridge to the level of the coal is 15 inches, there is little danger of this happening. This distance also will locate the bottom of the fire door or stoke hole.

The next step to decide upon is the depth of fire bed, bearing in mind the fact that the use of bituminous coal is actually equivalent to the employment of two separate and distinct fuels; one consisting of coke and the other of gas. For this reason it always has been the writer's practice to approach as near to gas producer principles as possible, not only for the sake of economy, but for subsequent uniformity of operations as well. Therefore, in his designs he has provided for a deep bed of fuel. In the case of a thin bed, the burning of the fixed carbon left after the volatile matter has been distilled off, serves to heat the fire pot intensely and locally rather than the hearth where the heat is desired. It has been the writer's effort to discourage this action and bring about as little combustion in the fire pot and as much in the hearth as practically is possible. If the fixed carbon on the grates can be converted into CO, then this combustible gas may be burned in the hearth, and carbon is transferred from a location where its combustion does minimum good to the place where it is of maximum benefit. For this reason, if a thin bed of fire is to be used the precentage of volatile matter in the coal should be as high as possible, while in the case of a thick bed the volatile matter should preferably not exceed 25 per cent.

Secondary Combustion

It happens, also, that through this procedure another thing is accomplished of equal if not of greater importance. Volatile matter is not driven from bituminous coal at a uniform rate. When such coal is stoked on a thin fire consisting of a glowing bed of fixed-carbon or coked-coal at a high temperature, the gas instantly surges from the added coal in great volume. Inasmuch as no means has been found whereby the blast valve for the secondary air can be adjusted to deliver an amount at all times in theoretical proportion to produce complete combustion with the amount of combustible gas passing over the bridge, the following undesirable conditions obtains: The instant the stoker fires, more combustible gas is passing over the bridge than properly can be taken care of by the fixed amount of secondary air, provided the air supply as it should be is fixed for the average amount of combustible gases passing over the bridge from the time the stoker fires until it is time for him to fire again. This state of affairs lasts for a short interval of time, when for some moments there will be about the theoretical proportion of combustible gas and air, after which the air will be increasingly in excess until the stoker again fires. It is plain that if the amount of secondary air must be fixed, the more uniformly the combustible gas is evolved the less serious will be this handicap.

While there appears to be no prac-

tical method of accomplishing this object, the condition can be improved if arrangements are made whereby the fixed carbon of the coal is converted to CO, which will serve to transfer the carbon where its combustion serves but little good to the hearth where it is badly needed. Not only will this occur, but it will, at the same time, better the unbalanced condition referred to, because there will, at all times, be a more constant supply of combustible gas passing over the bridge in a unit of time.

To control the situation still better the stoker should be instructed to fire a small amount of coal at frequent rather than a large amount at longer intervals of time. Since the level of the coal has been placed 15 inches below the top of the bridge, a distance 30 inches lower will give the location for the top of the grate bars, while an additional 30 inches will provide sufficient height for the ash pit. Since the width of the grate is established by the width of the furnace hearth, it remains to determine what should be its longitudinal dimensions. This obviously will depend upon the number of pounds of coal it is essential to burn per square foot of grate per hour. Experience has demonstrated that for this size furnace a grate area of about 26 square feet will meet the conditions required which is a compromise as between economy and speed.

Consequently if 5 feet 6 inches is taken as the length of the grate the area required will be obtained. If this distance is added to the other lengths cited, the total length from inside edge of rear bridge to inside of wall of the fire pot will be obtained.

If this design were being laid out on paper as in Fig. 1, a perpendicular line of indefinite length should be erected at the latter point, the proper length of which will be determined subsequently by its intersection with the roof line. To determine the lines for the furnace roof curve, at a section passing through the longitudinal axis of furnace, it is essential to establish three points only. First, the perpendicular distance above the front bridge; second, the highest point in the roof, which is usually directly over the tap hole; and the last, the distance above the rear bridge. For this capacity furnace the first point should be about 23 inches; the second will depend upon the character of castings to be made, and for average conditions would be 42 inches. If the castings made are light the distance should be greater than if they are heavy for in that case the sprue will occupy more room per ton. The distance for the last point should be about 12 inches. As the melting is chiefly accomplished by reflected heat from the roof, it is desirable to have it as close to the bottom as possible and still admit the charge in the furnace conveniently and rapidly. After locating these three points, on the paper, an easy curve may be drawn through these points with a flexible rule, taking the precaution of bringing the end of the curve that intersects the extreme wall of the fire pot as low as judgment indicates will not prove abnormal, to restrict the space in the fire pot, with the result that combustion will be discouraged in that department as much as possible, and forced to take place in the hearth.

All the inside lines needed for a longitudinal section up to the hearth side

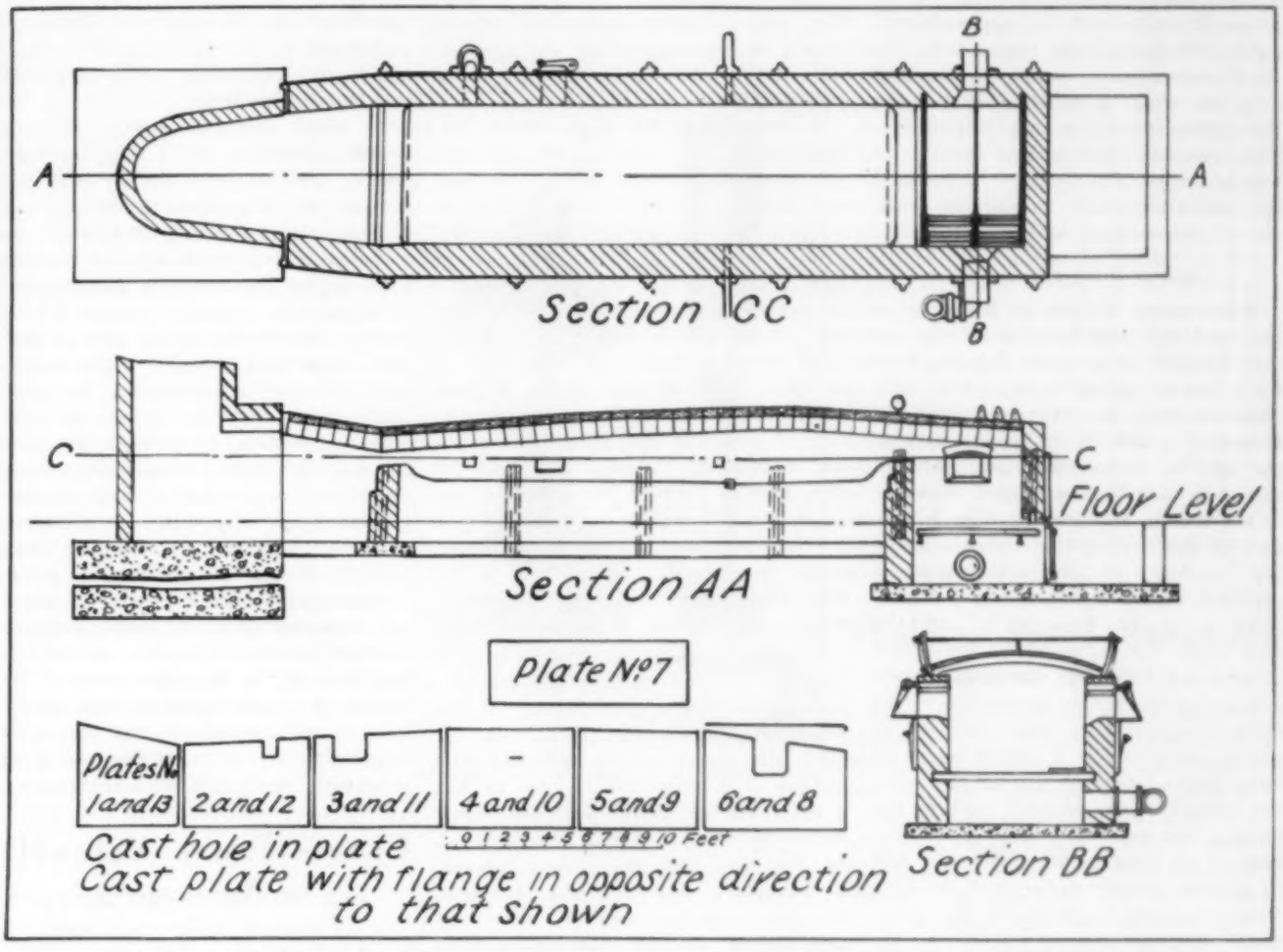


FIG. 3—DETAILS OF CONSTRUCTION FOR A 20-TON MELTING FURNACE FOR MALLEABLE IRON

of the rear bridge wall have been obtained. It will be sufficient if the top of the rear bridge be 12 inches wide, which in the direction of the stack may be stepped off in accordance with usual construction. The distance between the rear bridge and the stack is called the neck of the furnace, and while its length in no way affects combustion, it should be sufficiently long to prevent the rapid burning away of the lining of the stack as it is cheaper to repair the former than the latter. A distance of 10 feet from rear bridge to stack center will be approximately right. Obviously, with forced-draft, the stack requirement need be provided only for what is essential to prevent the smoke from proving a nuisance. The side-wall linings are usually 18 inches thick. The furnace is enclosed by iron plates, held in place by buck stays, conveniently spaced.

Standard Bung Recommended

While many designs of bung-frames are used, the one favored by the author consists of a 6-inch I-beam, bent for a center spring of 8 inches, with clamp castings on the ends, that are hinged at a hole in the lower part of the web by a bolt that goes through this hole and one of equal diameter in the casting as shown in Fig. 2. The part of the casting that extends below the eye-beam to clamp the brick is provided with a knife edge, and a steel plate is placed between it and the first brick for a uniform distribution of pressure. Through this construction a heavy pressure may be applied to the brick that will keep them securely in place. Not only is a strong and stiff bung frame provided, but as the webs are narrow a considerable part of the brick is left uncovered which will allow heat to be radiated off sufficiently fast to prevent damage to the roof. Another form of frame is shown in the design for a 20-ton furnace in Fig. 3.

While for the most part the ordinary fire sand bottom is used in this country, the author favors the brick bottom, which can be made of old bats which otherwise would be taken to the dump or ground up for other use. The brick should be laid on edge on a cushion of fire sand about 2 inches deep, and spaced about $\frac{5}{8}$ inches apart on all sides. A dry fire sand, having enough impurity to flux tightly with the brick then should be poured into all the crevices. Afterward more sand should be thrown on the surface, and this swept around by a stiff road-cleaning broom, to the end that every crevice is completely and tightly filled with sand.

A bottom laid in this manner may be relied upon to give much longer life than the regular bottom of fire sand.

The tuyeres should be located about a foot in front of the grade bridge and inclined at an angle of about 45 degrees. While the general practice is to use from four to six pipes for tuyeres, the author prefers the continuous type that goes practically across the roof. These deliver a thin sheet of air that cuts and completely mixes with the stream of combustible gases passing into the hearth instead of permitting the air to enter in jets. The ends of this continuous tuyere should be constructed so that the air will not impinge upon the side walls and thus cause erosion.

A direct-connected, motor-driven fan installed at the side of the furnace will prove to be more economical than one that is belt-driven and located at a distant point necessitating lengthy piping, while it is better practice to have a separate fan for the secondary air supply, as through this means both the volume and pressure can be regulated better. About 120 cubic feet of air per pound of coal seems to give good results for under grate supply, rate of oxidation and other factors being considered. About one-third of this amount should be provided for secondary air supply. While only a few of the plants at the present time make use of CO_2 recorder, little by little the wisdom of using this instrument more generally is recognized.

If a deep bed of fire is to be used it is quite essential to have properly designed and spaced grate bars. If the grate does not shed ashes with facility, the stoker shortly will find that instead of a deep bed of coal he has a deep bed of ashes, with the result that little if any CO will be generated. If the bars are too widely spaced, a happening that is less frequent, the bars quickly will be destroyed and trouble will be experienced from clinker with a coal that would not perhaps cause that annoyance under other conditions. The author has designed a grate bar of kite-shaped section, as a stiff bar can be made in this manner that will produce but minimum clogging as compared with rectangular bars of equal depth. It is plain, that as soon as ashes are deposited on such bars, they must either fall through with facility or clog only as far down as 1/3 depth of the bar which is the distance at which the kite section is of maximum width. Beyond this depth the section gets narrower and the space between the bars wider, and consequently the ash must fall free from this point down. The ends of the bars where they rest on the grate bar supports are of rectangular shape, the dimensions depending upon how far apart the bars are to be placed. These ends are proportioned to act in part as spacers. While certain forms of the shaking grate have given satisfaction, their adoption has been slow. It should also be stated that, once the fire pot has been filled, it is a mistake to allow the stoker to disturb it except to level the bed. He seems to be obsessed with the belief that, if he is not continually poking the fire, he is remiss in his duty, in spite of the fact that this method of procedure will result in the formation of clinker, making the conditions worse in a coal that has that tendency.

In some instances where the cost is not prohibitive, oil is used for fuel, and in other cases powdered coal. An average of 58 gallons of oil per ton of iron melted and a ratio of 4.50 of iron per ton of coal used, can be counted upon in the case of good installations, as against an average ratio of 2.5 of iron to one of coal in the case of regular air-furnace practice. The installation for oil is inexpensive as compared with that for powdered coal, unless provision is required to safeguard against strikes or for other causes that would necessitate a large storage capacity. In the case of powdered coal, its adoption by a plant of small capacity would be prohibitive, unless it was the intention to use this system for annealing also. Where conditions warrant, powdered coal is the fuel to use, due to its flexibility; but, if installed, provision should be made whereby it is not essential to run the entire installation in the event that the plant is running on quarter or half capacity.

Charts Prove Valuable in Accounting

(Continued from Page 242)

picture can be presented that will give him at a glance the exact state of his whole business, which the detail subordinated, so that the fundamental and important things stand out boldly in the foreground where they cannot be unnoticed, the executive is in a position to grasp and direct his operations with intelligence and certainty of control, which promises a successful business with full returns to all concerned.

There are several dangers in using ordinary charts prepared by novices. They are caused mainly by two factors; scale selection and the lack of standardized chart forms. If charts covering sales and sales expense are made and the scales for each chart chosen arbitrarily, there is no comparison

between the slopes of the two curves. When comparing sales and sales expense the observer is interested primarily in proportionate or percentage rates of increase rather than quantity rates; in other words any firm is willing to have its sales expense increase if sales increase in approximately the same proportion. All curves that are based upon a dependable scale selection table are comparable regardless of the amount of the data they represent or of the subjects they cover. The plotting of figures without the proper principles incurs the danger of creating many and various misleading pictures. Regardless of how large or small the business, when its data are charted correctly, facts are revealed which have constantly been overlooked in numerical reports.

To a considerable extent these ideas have been and at present are being carried out in many business institutions. Among the first to use graphic methods were insurance companies, railroads and similar businesses, the data covering whose operations are voluminous and usable only when graphically handled. A few years ago some industrial firms started curves showing fluctuations of their sales, productions, etc. Today many of the large concerns of the country have special graphic and statistical departments where this work is centralized and systematically done. Many small firms also apply this method on a small scale. In some cases where small firms do not care to handle the work themselves, they have a graphic chart man who works on the same basis as an auditing firm, constructing charts and keeping them posted monthly.

Discuss Gage Tolerances

Proposed allowances for tolerances and fits were considered July 17 at a meeting in New York of the committee on plain limit gages for general engineering work of the American Engineering Standards committee. This hearing was similar to the one in Cleveland the latter part of June.

Subcommittees of the National Screw Thread commission are to meet at the bureau of standards in Washington in August, while the next meeting of the full commission probably will be held in Washington during the second week of September. At its recent meeting the commission considered reports of the committees on special threads, on instrument threads and threads cut on brass tubing, on tap drill sizes and wire gages, and on bolt heads, screw heads and nuts.

Develops Micrometer and Height Gage

A new size inside micrometer having a lower range than the former model recently has been developed by the Reed Small Tool Works, Worcester, Mass. This micrometer, shown in the accompanying illustration with a height gage attachment, is graduated to read to thousandths of an inch and has the usual ½-inch run of spindle. It retains the regulation diameter of barrel, spindle and thimble and extra large surfaces allowing figures of generous size. The rods, fitted with

(RIGHT) INSIDE MICROMETER EQUIPPED WITH HEIGHT GAGE ATTACHMENT. (LEFT) TWO TYPES OF HEIGHT GAGE ATTACHMENTS WHICH HAVE BEEN DEVELOPED

hardened tool steel anvils adjustable for wear, are interchangeable on the threaded stud at the end of the micrometer head and can be used in combination. A detachable handle is furnished and so arranged that the micrometer can be used for right or left-handed work.

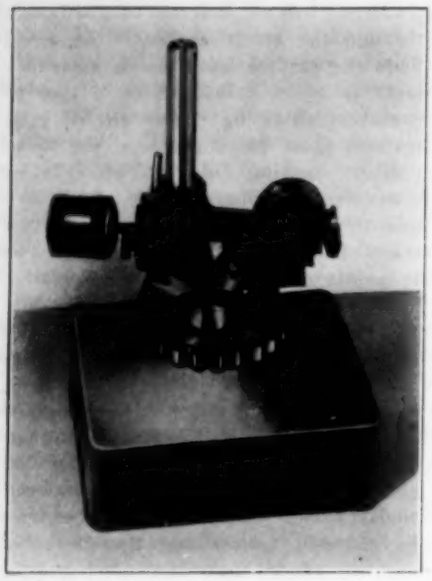
The standard set consists of the micrometer head, an adjusting wrench, five rods and ½-inch spacer, the capacity afforded being 2 to 7 inches. When five additional 5-inch spacers are used, the maximum range of 32 inches is secured. By use of the attachment shown in the lower left of the illustration, the inside micrometer can be transformed into a height gage. By attaching a rod of proper length to the micrometer, any desired range from 3 to 32 inches can be obtained, the rod being inserted downward through the steel base until the anvil finds the surface from which measurement is to be taken. Such a tool is useful in obtaining the height of projections from plane surfaces, the location of bushings in jigs, etc. It is convenient on planer work which frequently requires measurements to be taken from the bottom of a groove to points above and for setting planer tools or the milling machine table. The V-groove in the base adapts the tool for use in cylindrical work.

By inserting a 0.250-inch drill rod in the base and attaching a standard indicator, a surface gage is obtained for use in straightening shafts or for checking variance in distance between surfaces. A surface gage scriber can be clamped to the rod thus forming another handy tool. Intended mainly for height gage work, a round base has been developed, as shown in the upper left-hand corner of the illustration. Greater stability is secured and the reamed hole, which fits the sturdy measuring rod accurately, is greater in size and depth. The upper end of support, split vertically at right angles, is adjusted to afford a sliding friction as the rod is inserted and will tend to prevent side play. It also holds the base and micrometer measuring rod intact when the tool is lifted from one place to another.

Modifies Speed Range in Electric Motors

With the rapidly increasing use and distribution of alternating current, the Mechanical Appliance Co., Milwaukee, has recently introduced a new line of multispeed, alternating-current motors, a feature of which is that it affords speeds of 600, 720, 900 and 1200 revolutions per minute. In operation and application, this new motor has about the same wide range of speed variation obtained in direct-current motors. It is claimed by the maker that the introduction of the 720 revolution per minute speed constitutes a radical improvement and advance. The wide speed gaps in motors for machine drive has been eliminated as are also speed duplication and comstep is made possible by using an indemediate speeds.

The 720 revolution per minute speed step is made possible by using an independent winding on the stator for each speed, thus obtaining speed increments of 20, 25 and 33 1/3 per cent as compared with 50, 33 1/3 per cent in other types. These motors are of the squirrel-cage type and will carry full load indefinitely without exceeding 40 degrees Cent. Overload of 25 per cent can be carried two hours with a temperature rise not



THIS INSTRUMENT TESTS GEAR TEETH FOR ACCURACY

exceeding 55 degrees Cent. Motors can be furnished for constant horsepower, constant torque, or any required combination of both in two, three and four speeds, selected from 600, 720, 900, 1200 and 1800 revolutions per minute for 60-cycle circuits. The same ratings will be furnished for other frequencies, also 2-phase.

Control apparatus offered some difficulty with the new motors, however, a suitable equipment was developed and is now available for both automatic and remote control. Up-to-date protective devices are included. Among the uses for which the motors are applicable are for driving machine tools, conveyors, fans and blowers, air compressors and refrigeration machines. Various speeds may be obtained without excessive current consumption.

Horizontal Press Designed for General Work

A self-contained horizontal press having a wide range of ram speeds and a quick response to the movements of the control handle has been developed by the Oilgear Co., Milwaukee, for general work such as pressing wheels onto axles, pressing heads into pipe rollers, etc. The capacity of this press, which is shown in the accompanying illustration, is 25 tons at pressing speeds varying from ¼ to 6 inches per minute. Maximum speed of the ram travel out to the work is 37 inches per minute while the maximum return speed is 56 inches per minute. Ram speeds are changed quickly by means of the small control handle located on the top of the standard variable stroke pump. The stroke begins without shock and the push is steady, the ram moving forward without pulsations.

Power for operation is supplied by a constant speed, 2-horsepower electric motor. No accumulator or auxiliary pump is required. Suitable overload relief valves permit the ram to be driven at full speed against the stop without danger of injury. The cylinder is 9 inches in diameter and at full capacity a pressure of 800 pounds per square inch is exerted on the ram piston head. The large diameter of the ram, 5¼ inches, and the long guide, it is said, prevent the ram from deflecting even on the maximum stroke of 30 inches. The axis of the ram is 32 inches above the floor and the space between the stop supports, 24 inches. V-shaped stops can be located along the supports at regular intervals, being held in place by heavy steel pins.

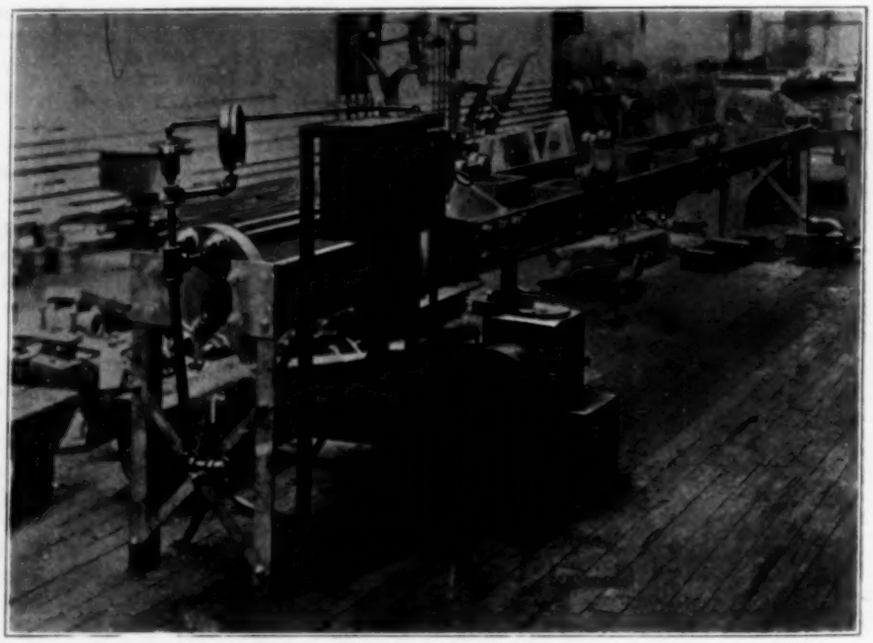
Devises Precision Gages for Gear Teeth

One of the recent additions to the line of precision gages made by the Pratt & Whitney Co., 111 Broadway, New York, is a set of instruments for testing gear teeth. This device, as shown in the accompanying illustration, is a simple and self-contained machine which tests the accuracy or uniformity of the gear tooth profiles and spacings of the teeth in production work. The instrument shown has a range of from 3 to 10 diametral pitch and may be used to check gears of any pressure angle and can be applied to a gear while it is in place in the machine.

Briefly, it is composed of a section of a straight-sided rack with two parallel effective faces, one fixed and the other movable. A third face, set at an angle to the two working faces, is used to hold the fixed working face in contact with the flank of the gear tooth. The fixed registering surface is in the center and the movable indicating surface at the right. The third surface at the left holds the central surface in contact with the involute surface of the gear tooth. The indicating surface at the right is mounted on two thin flat springs which act as pivots free from backlash. The dial indicator at the rear is actuated by a lever which has a ratio of 5 to 1, so that each division on the dial represents a movement of 0.0002 inch of the indicating surface.

In general the instrument is used as a comparator to test the uniformity of interchangeable and mating gears. If actual measurements are required, the distance between the two parallel working faces of the instrument can be measured. Stands are made to hold the two smaller sizes of the instruments when gears or pinion shaped cutters are being tested. In this case the gear is placed on a surface plate and rolled by the instrument. The actual cutting edges of cutters is tested so that errors are detected easily. These gages check gears in the following ranges of sizes: ¾ to 4 pitch, 3 to 10 pitch and 10 to 24 pitch.

A series of compression tests at temperatures between 20 and 700 degrees Cent. on carbon forging steels has been completed by the United States bureau of standards. In this series the proportional limit decreased slightly with rise in temperature to 300 degrees Cent. and thereafter more rapidly to a low value at 700 degrees Cent.



ELECTRIC-DRIVEN OIL PRESS WHICH MAY BE USED FOR VARIOUS KINDS OF WORK

Steel Shortage

Feared in Canada—Bridge Contract Awarded—Germany Gets Much

Toronto, Ont., July 24.—Owing to the fuel shortage some consumers of steel are becoming anxious about supplies of semifinished material for future requirements. A steady demand for structural steel for new work and for stock, is current and in some cases rapid deliveries are urged. The requirements of the Toronto transportation commission are a leading factor in keeping the mills busy. Rails for the street railway have been coming forward at the rate of 500 tons per month. The steel contract for the Gerrard bridge at Montreal involving the fabrication and erection of over 1000 tons has been awarded to the Canadian General Electric Co.

The electric company has acquired all the interests of the Canadian Edison Appliance Co. of Stratford, Ont., in which it has always held a controlling interest. The Stratford factory after Aug. 1 will be known as the Hot Point division of the Canadian General Electric Co. The sales department will be moved to the head office in Toronto.

Twelve steamers are now engaged in exporting iron ore from mines of the British Empire Steel Corp. at Wabana, Newfoundland, to Germany by way of Rotterdam. It is estimated by the corporation that about 750,000 tons will have been shipped before the end of the year. Payment is being made in British money.

Fire Clay Brick Output Gains; Silica Falls

Pittsburgh, July 25.—While production of fire clay brick increased from 59 to 62 per cent in June, according to data compiled by the Refractory Manufacturers' association, output of silica brick fell off slightly from 45 to about 42 per cent. Shipments of fire clay increased during June, going to 58 per cent from about 55 per cent, shipments of silica remaining at about the same rate as the preceding month, namely 38 per cent. Stocks of fire clay continued the forward movement which commenced Jan. 31, reaching 195 per cent, as compared with about 194 per cent on May 31. Stocks of silica brick likewise increased from 137 to 143 per cent on June 30.

New orders for both fire clay and silica brick registered an advance, the increase being greater in silica. New business in fire clay on June 30 amounted to approximately 75 per cent as against 65 per cent May 31, an increase of 10 per cent, while in silica new orders increased from 39 per cent May 31 to 58 per cent June 30, an increase of about 19 per cent. This gain is reflected in the percentage of unfilled orders which increased measurably during the month, fire clay going from 59 per cent May 31 to 72 per cent June 30, and silica from 55 per cent to 73 per cent as of June 30.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

PROBLEMS of accident prevention in the iron and steel industry will be discussed at the eleventh annual convention of the National Safety Congress to be held in Detroit, Aug. 28 to Sept. 1 at the Cass technical high school. J. R. Mulligan, Bethlehem Steel Co., Bethlehem, Pa., will be chairman of the metal section; J. A. Northwood, Cambria Steel Co., Johnstown, Pa., vice chairman and Walter Hart, Jones & Laughlin Co., Pittsburgh, secretary. On the program which starts Tuesday will be addresses regarding, "Outstanding Features of the Safety Movement in Iron and Steel, 1910-1919, by Dr. L. W. Chaney, United States bureau of labor statistics, Washington, and "Safety in Electric Furnace Operation," by E. T. Moore, Halcomb Steel Co., Syracuse, N. Y. Safe handling of gas at the blast furnace and safety in crane handling will be discussed.

* * *

Chemists To Meet in Pittsburgh

Of special interest to those attending the annual fall meeting of the American Chemical society which will be held in Pittsburgh, Sept. 4 to 9, at the Carnegie Institute of Technology will be a paper entitled "Chemical Control of Gaseous Detonation with Particular Reference to the Internal Combustion Engine," by Thomas Midgley Jr., General Motors Research Corp., Detroit, who will be assisted by T. A. Boyd. The motor will be operated on detonating and nondetonating fuels. Another paper on "Pittsburgh as a Chemical Manufacturing Center," will be delivered by Dr. J. H. James, Carnegie Institute of Technology, Pittsburgh and Dr. W. F. Rittman of the same institution.

* * *

Engineers Awarded Medal

For distinguished service during the war, Col. Arthur S. Dwight, president of the American Institute of Mining and Metallurgical Engineers, and Charles F. Rand, chairman of the Engineering Foundation, recently were decorated with the Croix de Chevalier de la Legion d' Honneur by the French goverament. The decorations were conferred by Consul General Gaston Liebert at a luncheon given in his honor at the Engineers club. In a speech urging unity of effort among engineers of all nations to advance world peace and engineering ideals, Calvin W. Rice, secretary of the American Society of Mechanical Engineers, announced that Dr. M. E. deMargerie, director of the geological service of France, has been appointed French exchange professor to America in applied science and engineering. The American exchange professor under this arrangement is Dean John Frazer of the University of Pennsylvania, who is now in Paris. Dr. deMargerie, will lecture on applied geology, especially as applied to topography, in seven American universities during 1922-1923, opening probably at Columbia. Other institutions participating in this exchange plan are Cornell, Harvard, Johns Hopkins, Yale, University of Pennsylvania and Massachusetts Institute of Technology.

Convention Calendar

Aug. 28-30—Lake Superior Mining Institute, twenty-second annual meeting at Houghton, Mich. A. J. Yungbluth, Ispheming, Mich., is secretary.

Sept. 5-9—American Chemical society, fall meeting at Pittsburgh. Charles L. Parsons, Box 1505, Washington, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Sept. 21-23—American Electrochemical society, fall meeting at the Windsor hotel, Montreal, Canada. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 2-7—American Society for Steel Treating, exposition and convention at the General Motors Co. building, Detroit. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Oct. 18-20—Society of Industrial Engineers, national convention and exhibition at the McAlpin hotel, New York. George C. Dent, 327 South La Salle street, Chicago, is business manager.

Gives Approval to Steel Mergers

Attorney General Daugherty Tells United States Senate Bethlehem's Purchase of Lackawanna and Midvale-Republic-Inland Consolidation Do Not Violate Laws—Shows Where Competition Exists and Benefits of Unions

WASHINGTON, July 25.—Unqualified approval by the department of justice of the absorption of the Lackawanna Steel Co. by the Bethlehem Steel. Corp. and the proposed Midvale-Republic-Inland merger has been transmitted to the senate by Attorney General Daugherty. The attorney general finds the two consolidations entirely in consonance with the Sherman, Clayton and Webb-Pomerene acts and goes farther and declares the 3-company merger to be in furtherance and not in restraint of trade.

The opinion is in response to the resolution adopted by the senate on May 8 at the instance of Senator Robert M. LaFollette, of Wisconsin, who charged that merger moves then under way within the steel industry would result in monopolistic control of the steel industry outside of the United States Steel Corp.

Mr. Daugherty's formal opinion closes the case so far as the department is concerned. The federal trade commission, acting independently of the department, already has issued a complaint in the Bethlehem-Lackawanna case but has not yet acted in the Midvale-Republic-Inland case.

For the reason that 1921 was an abnormal year Mr. Daugherty explained he had selected 1920 as a typical year. Taking up the Bethlehem-Lackawanna merger first, he cited the steel products which Bethlehem makes and Lackawanna does not. The exclusive Lackawanna products then were given as well as those made in common by the two companies. The opinion says:

"Taking the figures for 1920 as a basis, it appears that of the income received by Bethlehem from its steel products division, 67.60 per cent was derived from products which Lackawanna does not produce. In the case of Lackawanna, 31.98 per cent was derived from products which Bethlehem does not produce. Or to state the matter in a different way, Bethlehem's income received from products common to both companies, including both the domestic and foreign trade, was 32.40 per cent, Lackawanna's, 68.02 per cent.

"In this connection it should be borne in mind that both companies engage in export as well as domestic trade. Inasmuch as the antitrust laws differentiate between the two, it will be well to produce the figures showing the percentages of each. Of the total income, both domestic and export, received by Bethlehem from its steel products division in 1920 on all articles, common to both companies, substantially 83 per cent was received from the domestic trade, and 17 per cent from the export. In the case of Lackawanna, substantially 84 per cent was received from the domestic and 16 per cent from the export.

"The following table shows the products in the domestic trade common to both companies in 1920, and the percentage of income represented by each such product to the total income on both common and non-common products, the Bethlehem's income from its shipbuilding activities being wholly disregarded:

Products	Bethlehem Per cent	Lackawanna Per cent
Coke and by-products	3.48	2.12
Pig iron	2.12	2.24
Blooms, billets and slabs	2.06	1.08
Sheet bars	2.15	7.31
Rails, standard	5.02	30.01
Rails, light tee	0.06	1.53
Structural shapes, standard	8.82	10.21
Plates, 7⅝-inch and under	2.23	7.82
Concrete bars	0.07	0.01
Standard splice bars, and continuous and 100 per cent joints	1.96	2.49
Bonzano joints	0.19	0.06
Tie plates	0.19	0.12
Railroad spikes	0.57	0.95
Track bolts	0.56	0.32
Total common products	29.48	66.27
Total all others	70.52	33.73
Total of both	100.00	100.00

Going then to the products common to both companies the opinion passes over coke and by-products and points out that the pig iron produced by both is primarily intended for their own use. In 1920 pig iron production totaled 36,925,987 tons, of which Bethlehem produced 4.69 per cent and Lackawanna 2.87. Bethlehem sold 107,145 tons in the merchant trade and Lackawanna 33,997. The only states in the New England district to which both shipped pig iron in 1920 were Connecticut and New Hampshire. In New York, Delaware, District of Columbia, Maryland, New Jersey, Ohio, Pennsylvania and West Virginia Bethlehem in 1920 sold 99,540 tons and Lackawanna 22,327 tons. Of Bethlehem's 1920 shipments of pig iron 57 per cent went to Pennsylvania and of Lackawanna's 65 per cent to New York.

Bethlehem's sales of blooms, billets and slabs in 1920 are given as 51,631 tons and Lackawanna's as 9408 tons out of a total output in the United States of about 35,000,000 tons. Bethlehem's 1920 sales of sheet bars are cited as 49,870 tons and Lackawanna's as 70,473 tons. Lackawanna shipped 94 per cent of its sheet bars to New York buyers and Bethlehem 88.17 per cent to Pennsylvania customers. Out of a combined sheet tonnage of 107,813 Bethlehem contributed 42.71 per cent and Lackawanna 57.29. Production of structural shapes in the United States in 1920 totaling 3,306,748 tons, included 204,837 tons from Bethlehem and 88,877 from Lackawanna. In addition Bethlehem shipped 185,347 tons of Bethlehem shapes, giving the two companies 14.49 per cent of the total domestic production. Bethlehem in 1920 marketed one-third of its shapes in Pennsylvania and Lackawanna about one-fourth in New York. Concerning rails the attorney general states:

"Lackawanna's great specialty is the production of steel rails. Of the entire tonnage produced in the United States in 1920, 2,604,116 tons, it contributed 15.18 per cent and Bethlehem, 6.78 per cent. If these companies combine they will, if the ratio continues, control substantially 22 per cent of the country's production. About seven-eights of this production is sold in the United States. Of the entire amount sold by these two companies in the New England district, Bethlehem contributed 16.37 per cent; Lackawanna 83.63 per cent. In the eastern district Bethlehem contributed 38.69 per cent; Lackawanna 61.31 per cent. In the western district Bethlehem contributed 4.73 per cent; Lackawanna, 95.27 per cent. In the southern district Bethlehem contributed 67.08 per cent; Lackawanna, 32.92 per cent. Neither company shipped any into the Pacific coast district.

"My investigation, conducted by representatives in the field, convinces me that in the New England district these two companies enjoy a substantial amount of the trade in rails. None of the railroad representatives in the New England district voiced any apprehension that a merger of these companies would result in an enhancement of prices or a monopolistic control."

Under the caption, "Percentage of principal products produced by other manufacturers and the competition that will exist if this merger goes through," the attorney general says:

"*Pig iron*: The total production in the United States in 1920 was 36,925,987 tons, of which Bethlehem and Lackawanna together contributed 7.56 per cent. The amount produced by others was 34,137,290 tons, or 92.44 per cent.

"*Structural shapes*: The entire production in the United States for 1920 was 3,306,748 tons. Of this tonnage

Bethlehem and Lackawanna together contributed 21.43 per cent.

"*Plates*: 4,755,133 tons were produced in the United States in 1920; Bethlehem and Lackawanna together contributed 4.73 per cent.

"*Rails*: The total production in the United States in 1920 amounted to 2,604,116 tons of which Bethlehem and Lackawanna together contributed 21.96 per cent.

"*Steel ingots*: The country's rated annual ingot capacity is 50,440,000 tons. Of this amount Bethlehem and Lackawanna's combined capacity is 9.7 per cent, that of the United States Steel Corp. is 45 per cent and that of all others is 45.3 per cent.

"*Will a merger of these companies violate the Act of July 2, 1890, commonly known as the antitrust act?*"

"In my opinion it will not. I am unable to find any ground for asserting that the acquisition of Lackawanna by Bethlehem will offend the Act of July 2, 1890, commonly known as the Sherman or antitrust act. The numerous decisions of the Supreme Court, ranging over a period of 30 years, leave little room for doubt as to the true scope and meaning of this important statute.

"I need not stop to point out that in *United States* v. *U. S. Steel Corporation*, 251 U. S. 417, the Supreme Court refused to declare illegal a combination of much greater magnitude.

"*Will a merger of these companies violate the Act of Oct. 15, 1914, commonly known as the Clayton act?*

"Here also I am constrained to the conclusion that it will not. But different considerations in part apply. That act (sec. 7) makes it illegal for one corporation engaged in interstate commerce to acquire the stock or other share capital of another corporation engaged also in such commerce where the effect of such acquisition may be substantially to lessen competition between them or to restrain commerce in any section or community, or tend to create a monopoly of any line of commerce. It is obvious that the acquisition of the stock of one company by another is not prohibited where all that takes place is a mere lessening of competition.

"This conclusion renders it unnecessary for me to consider another question, the solution of which is attended with no little difficulty, and that is whether the proposed merger would fall within this act if its effect were to substantially lessen competition. As we have just seen, that act does not in express terms prohibit the acquisition of physical assets. What it prohibits is the acquisition of the stock or other share capital. What the Bethlehem company in this instance proposes to do is to acquire, not the capital stock of the Lackawanna, but an outright conveyance of its physical assets.

"*Will a merger of these companies violate the Act of April 10, 1918, commonly known as the Webb act?*

"These companies are members of an association formed pursuant to the authority granted by this act to handle export trade. It is obvious from what I have already said that this act will in no wise be violated if this merger goes through.

"*Will a merger of these companies violate the Act of Sept. 26, 1914, commonly known as the Federal Trade Commission Act?*

"The senate's resolution is broad enough to call for an expression of my views upon this point; but for obvious reasons I must decline to express any. The federal trade commission is alone vested with the power of enforcing that act."

Three Company Competition

Then taking up the Midvale-Republic-Inland merger the attorney general deemed his analysis of pig iron in regard to the Bethlehem-Lackawanna merger sufficient also to cover the 3-company merger. In regard to the production of other products he said:

"*Blooms, billets and slabs*: In the New England district none of the three companies in 1920 sold any blooms. Midvale sold 33 tons of billets and 3 tons of slabs. Republic sold 1055 tons of billets; and no slabs. Inland sold neither blooms, slabs nor billets. In the eastern district Republic sold no blooms. Midvale sold 10,582 tons, over half of which went to New York. Inland sold 36,451 tons, all but 90 tons going to Ohio and Pennsylvania. As a rule Inland's shipments into this territory are exceedingly small, the heavier tonnage for 1920 being accounted for by the fact that an unusual shortage occurred in this district in that year. With respect to billets, Midvale sold 953 tons; Republic 6977 tons; Inland 12,747, all but 154 tons going to Ohio. With respect to slabs Midvale sold 3015 tons; Republic 1,845; Inland 15,021 tons.

"In the western district Midvale sold only 4 tons of blooms, 56 tons of slabs, and 2733 tons of billets; Republic none; Inland 217 tons of blooms and 33,819 tons of billets, of which over 30,000 were sold in Illinois. In the southern and Pacific coast districts the sales made by each are insignificant.

"*Sheet bars*: None of the companies sold this product in the New England district. In the eastern district Midvale sold 15,792 tons, over half of which was sold in Pennsylvania; Republic, 173,533 tons, of which all but 18,759 tons were sold in Ohio; Inland sold 35,300 tons, 22,302 tons going to Ohio and the balance to Pennsylvania. In the western district Midvale sold none at all; Republic 165 tons; Inland, 2928 tons, all but 39 tons being sold in Indiana.

"*Plates*: Midvale contributed 8.22 per cent, Republic 0.75 per cent and Inland 2.31 per cent. In the New England and western districts Inland sold only 576 tons; Republic 27,956 tons, 16,215 of which were sold in Pennsylvania, 6763 tons in Ohio and 3153 tons in Maryland. On the other hand Midvale, whose sales aggregated 269,057 tons, reached every one of the states in these two districts. In the western states Midvale sold 26,054 tons; Inland 94,850 tons; while Republic sold but 67 tons. In Illinois and Indiana Inland's sales aggregated over 68,000 tons; Midvale's sales in these two states amounted to about 10,000 tons. In the southern states Midvale's sales amounted to 18,260; Republic 1137; Inland's 844 tons. In the Pacific coast states Midvale's sales amounted to 6004 tons; Inland's to 3544; and Republic's to 26 tons.

"*Sheets*: Midvale is not a manufacturer of this article. In the New England and eastern districts Republic sold 32,204 tons; Inland only 1279 tons, all but 214 tons of which went to Ohio. In the western district we find Republic sold 9077 tons, whereas Inland sold 84,600 tons. Of the 9077 tons sold by Republic over half found its way to Illinois, in which state Inland sold 44,980 tons. In the southern district Republic sold 3709 tons; Inland 5030 tons. In the Pacific coast district Republic sold 1704 tons; Inland 5751 tons. Total production of sheets in the United States in 1920 was 4,582,547 tons, Inland contributing 2.3 per cent and Republic 1.09.

"*Structural shapes*: Republic does not manufacture this item. In the entire New England and eastern districts Midvale sold 79,032 tons; Inland 4174 tons. Midvale reached every state in this territory; Inland only Connecticut, New York, Ohio and Pennsylvania. In the western district the Midvale sold 13,985 tons; Inland 106,747 tons. In the southern district Midvale sold 5145 tons; Inland 1560 tons. In the Pacific coast district Midvale sold 3109 tons; Inland 7746 tons.

"The entire production in 1920 in the United States was 3,306,748 tons, of which Midvale contributed 3.61 per cent and Inland 3.72 per cent. It will be seen from the figures just given that the great bulk of Midvale's tonnage is marketed in the New England and eastern territory, where Inland finds a market for about 1/19th of the tonnage marketed by the Midvale. On the other hand, the great bulk of Inland's tonnage is marketed in the western district, where Midvale markets about 1/4th of the tonnage marketed by the Inland company.

"*Rails*: Until recently Midvale was the only one of these three companies to manufacture rails. In March, 1922 Inland however began their manufacture and sale. It is apparent from the discussion of this item in dealing with the other merger that no competition between the two companies will exist with respect to rails, the plants of each company being close to 800 miles apart.

"*Merchant bars*: In point of tonnage this is the most important item in the steel industry. To obtain an accurate idea of the sales made by these three companies it will be well to divide merchant bars into three classes: (1) steel bars; (2) old rail bars; (3) iron bars. Iron bars may be disregarded, Republic being the only one that makes them. Midvale may be disregarded so far as old rail bars are concerned, for it does not make them. And so far as the New England and eastern districts are concerned Inland may be entirely disregarded with respect to steel and old rail bars for it sold none of the latter and only 877 tons of the former.

"Coming now to steel bars, in the New England and eastern districts Midvale sold 132,087 tons; Republic 191,712 tons. In the western district the sales of steel bars were: Midvale, 30,597 tons; Republic, 44,842 tons; Inland, 73,922 tons. In the southern

(*Concluded on Page 257*)

Tool Merger

Details Are Near Completion—Two Additional Companies Are Involved

New York, July 25.—Further details in the organization of the new $30,000,000 machine tool combination have been completed. Officers and directors have been elected, a temporary working arrangement settled upon, and all property transfers adjusted. In addition, two new companies have been announced, seven now being involved in the combination. These companies are the Ingle Machine Co., Rochester, N. Y., and the Dale Machinery Co., Inc., New York.

As recently announced the new company was incorporated in Delaware as the Consolidated Machine Tool Corp. of America, 17 East Forty-second street, New York, and at the time five companies were mentioned, as follow: Betts Machine Co., Rochester, N. Y.; Hilles & Jones Co. Wilmington, Del.; Modern Tool Co., Erie, Pa.; Newton Machine Tool Works Inc., Philadelphia; and the Colburn Machine Tool Co., Cleveland.

Under the new working arrangement the active management of the six plants involved will remain in the hands of the present executives, but will be under the general direction of C. K. Lassiter, newly appointed president of the consolidation and for many years vice president of the American Locomotive Co. Existing sales agencies in various cities throughout the country and abroad are being maintained.

The newly elected officers are as follows: Chairman, W. H. Marshal formerly president of the American Locomotive Co.; President, C. K. Lassiter; vice presidents, J. J. Dale, president of the former Dale Machine Co., Inc.; A. H. Ingle, president of the Betts Machine Co.; H. W. Champion, president of the Newton Machine Tool Works Inc.; H. W. Breckenridge, vice president and general manager of the Colburn Machine Tool Co., and H. J. Bailey, president of the Hilles & Jones Co.; and secretary, R. R. Lassiter. The treasurer is to be announced later. While the directorate has been appointed this also is to be made public at a later time.

The Consolidated company is enlarging the New York offices formerly occupied by the Dale company, and will have approximately 5000 square feet of floor space.

Approve Expansion Plans

Stockholders of the Lima Locomotive Works, Inc., Lima, O., have approved plans submitted to them for the re-capitalization and enlargement of the company and its plant. Under the plan, two shares of no par common will be exchanged for one of the present issue, making the total new common stock 300,000 shares. Plans call for extensions at Lima costing $1,500,000 in addition to $1,500,000 already expended on the work.

Colorado Fuel & Iron Co. Earnings Increase

Net earnings of the Colorado Fuel & Iron Co. for the second quarter this year were $1,012,094 as against $596,243 in the first quarter and $682,490 in the second quarter last year. After all charges and the addition of other income, the second quarter's deficit this year amounted to only $18,430 compared with $273,752 a year ago and $431,269 the first quarter 1922. The statement for the second quarters of both 1922 and 1921 compares as follows:

	1922	1921
Gross receipts	$8,650,240	$7,990,093
Operating expenses	7,638,146	7,307,[illegible]3
Net earnings	$1,012,094	$ 682,490
Other income	69,190	101,277
Gross income	$1,081,284	$ 783,767
Interest, taxes, etc.	723,703	686,890
Depreciation	376,011	370,6[illegible]
Deficit	$ 18,430	$ 273,752

In view of last year's second quarterly statement and this year's first quarter's report, the company's business indicates improvement. This consideration gives a different view to the comparative statements covering the first half year of 1922 and 1921. In the first six months this year the deficit was $449,699 as against a surplus of $231,775 in the same period last year. The income accounts for the two periods follow:

	1922	1921
Gross receipts	$15,225,901	$18,018,835
Operating expenses	13,617,564	16,239,247
Net earnings	$ 1,608,337	$ 1,779,588
Other income	133,996	201,273
Gross income	$ 1,742,333	$ 1,980,861
Interest, taxes, etc.	1,440,010	1,378,457
Depreciation	752,022	370,629
Deficit	$ 449,699	*$ 231,775

*Surplus.

Republic Iron & Steel Co. Again Shows Surplus

A surplus of $86,382, with a deferred dividend on the outstanding $25,000,000 preferred stock for the second quarter this year, is reported by the Republic Iron & Steel Co. in its financial statement for the three months ending June 30. In the corresponding period last year, after allowing for the preferred dividend, the company reported a deficit of $1,321,173. In the first three months of 1922 the final deficit was $712,082.

For the second three months this year, as compared with the same period last year, the company's detailed statement of income and expenses was as follows:

	1922	1921
Operating profit	*$563,053	†$508,447
Other income	.....	54,873
Total income	$563,053	†$453,574
Depreciation and renewals	249,575	175,675
Exhaustion of minerals	22,322	30,155
Bond interest	204,774	224,269
Net profit	$86,382	†$883,673
Preferred dividends	.....	437,500
Surplus	$86,382	‡$1,321,173

*After charges for maintenance and repairs. †Loss. ‡Deficit.

Covering the first six months of both years the detailed account was:

	1922	1921
Operation profit	*$885,989	†$ 38,205
Other income	.....	106,128
Total income	$285,989	$ 67,923
Depreciation and renewals	403,431	353,472
Exhaustion of minerals	81,726	85,000
Bond interest	426,532	408,513
Net loss	$625,700	$779,062
Preferred dividends	.....	875,000
Common dividends	.....	450,000
Deficit	$625,700	$2,104,062

*After charges for maintenance and repairs. †Loss.

Unfilled orders of the Republic company at the end of the second quarter this year totaled 196,886 tons, a gain of 66,335 tons over the end of the first quarter. On Dec. 31 last year the unfilled orders aggregated only 91,570 tons.

Receivers for War Plant

The Thurlow Steel Co., Chester, Pa., has been placed in the hands of E. Wallace Chadwick of Chester and Howard M. Lutz of Media, Pa., as receivers. It was stated in court that the steel company was insolvent to the extent of $1,000,000. The company was organized in 1916 with a capital of $25,000 to manufacture shells and other war materials and was forced to close down when the war ended.

Gulf States Steel Gains

Income of $225,664 net after all charges is reported for the second quarter this year by the Gulf States Steel Co. which in the same period last year reported a deficit of $53,353. The net operating income for the quarter now covered in the company's financial statement was $313,740. The corresponding figure a year ago was $34,396.

Record Order

Of Silica And Fire Clay Brick Placed —Conditions Are Mixed

Pittsburgh, July 25.—Two distinctly different trends are noted in the refractories market. First, some consumers, more or less seriously crippled by the combined coal and railroad strikes, are issuing suspensions or hold-up instructions on their brick orders; second, others are endeavoring to hurry forward shipments of brick, so orders will not become tied up in transit because of the railroad strike. As the interruption to blast furnace and open-hearth operation grows, the holding up of orders is expected to increase and in the meantime brick producers have to pay premium prices to obtain coal. These fuel prices are reaching the point where it will be no longer possible to operate kilns at a profit, and partial or complete shutdowns will be numerous. It is said to take 1½ to 2 tons of coal to make 1000 silica brick, and one to 1½ tons of coal to produce 1000 fire clay brick. To make up the difference in fuel cost inaugurated by the present high levels being asked for coal, it would be necessary therefore to advance brick prices anywhere from $3 to $6 per thousand. No such action yet has been taken, however, only certain brands of fire clay being raised $2 per thousand and silica $3 per thousand as of July 1, as indicated a few weeks ago. The latest district to institute this increase is Maryland, where the minimum now is $34 on No. 1, and $28.50 on No. 2 fire clay.

Demand for brick lately has been heavy and perhaps the largest order for several years is that which has come to prominent producers for the Clairton by-product plant expansion of the Carnegie Steel Co. This involves 16,000,000 to 18,000,000 brick, about 60 per cent silica and the remainder fire clay. Several other fairly sizable orders have been placed last month and this for blast furnace relinings, one of the largest being for the new furnace of Witherbee, Sherman & Co. This calls for a trifle under 3,000,000 brick for the blast furnace and for stoves. Recent orders for silica brick have involved lots of 50,000 to 300,000 brick at a time. Chrome brick at $42 likewise has been fairly active in lots of 5000 to 10,000 brick each although both the Carnegie Steel Co., the Bethlehem Steel Co., and other large steel producers have taken larger amounts, 25,000 to 95,000 brick at a time. Similar purchases of magnesite brick at $56, seaboard, have been noted, including the order of the Wisconsin Steel Co. for about 120,000 magnesite brick, and that of a Buffalo interest for about 25,000.

Refractories

FIRE CLAY BRICK

(Per 1000 f.o.b. works)

Pennsylvania, No. 1	$32.00 to 36.00
Pennsylvania, No. 2	28.00 to 32.00
Ohio, No. 1	32.00 to 35.00
Ohio, No. 2	28.00 to 32.00
Illinois, No. 1	32.00 to 37.00
Illinois, No. 2	30.00 to 35.00
Kentucky, No. 1	32.00 to 37.00
Kentucky, No. 2	30.00 to 32.00
Missouri, No. 1	35.00 to 42.00
Missouri, No. 2	28.00 to 33.00
Maryland, No. 1	34.00 to 42.00
Maryland, No. 2	28.50 to 31.00

SILICA BRICK

Pennsylvania	$33.00
Chicago	38.00 to 41.00
Birmingham	40.00

MAGNESITE BRICK

(Per Net Ton Seaboard Base)

9 x 4½ x 2½	$56.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 3½	$42.00

University Offers Course in Metal Marketing

To acquaint students with the fundamental facts underlying the minerals and raw materials situation the school of commerce, accounts and finance of New York university, New York, has scheduled a course for the coming school year which will deal with this subject. The character and source of supply, the methods and cost of preparing materials for market and their relation to other lines of business are general topics to be given consideration. Dr. Ernest Lilley, geologist and mining engineer, is to be the lecturer.

Some of the discussions which will be of interest to the iron and steel industry will be the character of coal reserves and resources, problems of the American coal, coke and coal tar industries and the water and super power systems. During the spring term which will be devoted to the commercial geology of the metals the class will consider, under the iron group, the mining and preparation of iron and steel, world problems in iron ore conservation and utilization, the major and minor alloy bases. Flux materials, refractories and insulators and abrasives will occupy the attention of the process materials section. One of the last groups will take up the nonferrous metals from the standpoint of the American copper industry, problems of the lead and zinc industries, major imported metals as tin and nickel and the minor metals.

The course is divided into two sections one being a fall and the other a spring term. Classes are to be held at the Washington square division of the university.

Output Curtailed

Among Coal Tar By-Products—Prices Are Holding

New York, July 25.—Output of coal tar products is being seriously affected by the strikes. The coal strike in itself had not resulted in any curtailment, but with the rail strike now proving a factor, output has been reduced considerably. Ovens are not completely down, but in most cases, the coking time has been extended. One leading effect of the rail strike has been the reduction in shipments from the West Virginia nonunion mines.

Sellers of benzol at present are considering only spot business and are not able, due to the shortage of supplies, to handle it all. This in a measure is also true of the situation in toluol and solvent naphtha. Sellers are only able to take nearby business, and the scarcity of solvent naphtha is more marked than of toluol, due to the fact thaf even under more normal conditions such as prevailed a month ago, the producers are not greatly disposed to devote much of their light oil production to solvent naphtha.

Prices, while strong, are unchanged as follows: Pure benzol, 30 to 33 cents, f.o.b. works in tanks, and 35 to 38 cents in drums; 90 per cent benzol, 27 to 29 cents in tanks, and 32 to 34 cents in drums; toluol 30 cents in tanks, and 35 to 38 cents in drums; solvent naptha, 27 to 29 cents in tanks, and 33 to 34 cents in drums; commercial xylol, 29 to 32 cents in tanks and 34 to 37 cents in drums. Naphthalene is holding at 7 to 8 cents, f.o.b. works in flakes and 8 to 9 cents in balls.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.30 to $0.33
Toluol	.30 to .33
Solvent naphtha	.27 to .29
Commercial xylol	.29 to .32

Per Pound at Producers' Plants

Phenol	$0.15
Naphthalene, flake	.07 to .08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$2.80 to $2.85

Contract

Pure benzol	$0.30 to $0.33
Toluol	.30 to .33
Solvent naphtha	.27 to .29
Commercial xylol	.29 to .32

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months)	$2.80 to $2.85

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

EDWARD PETERSON, assistant chief engineer of the Treadwell Engineering Co., Easton, Pa., has become associated with the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., as chief engineer. Formerly he was assistant to A. F. Backlin, chief engineer of the American Steel & Wire Co., at Pittsburgh.

James C. Potter, president of the Potter & Johnston Machine Co., Pawtucket, R. I., has returned from Europe.

W. C. Durant has become president of the Locomobile Co., Bridgeport, Conn.

Chairman E. H. Gary of the United States Steel Corp. expects to leave Aug. 1 for a vacation in the Rocky Mountains.

Sam F. Long, 1730 North Cleveland street, Canton, O., recently was appointed sales representative for the National Roll & Foundry Co., Avonmore, Pa.

G. Harold Gilpatric, secretary and treasurer of the Putnam Foundry & Machine Co., Putnam, Conn., is a candidate for a third term as treasurer of Connecticut.

Frank H. Willard has been elected vice president and general manager of the Graton & Knight Mfg. Co., Worcester, Mass., which positions he held previous to the recent reorganization.

Frederic W. Howe, vice president and manager of the Providence, R. I., department of the Crompton & Knowles Loom Works, Worcester, Mass., has returned from a three months trip to China and Japan.

S. F. Cox, formerly assistant to the consulting engineer of the Pittsburgh Plate Glass Co., has been made chief engineer of the Calorizing Co., Pittsburgh, the duties of which include management of the Wilkinsburg, Pa., plant of the company.

Robert W. Appleton, production engineer of the Pierce Arrow Motor Car Co., Buffalo, has been appointed manager of purchases of the company. Mr. Appleton will continue his duties as production engineer. He has been identified with the company for more than 20 years.

Dr. T. T. Read, chief of the information service of the bureau of mines, Washington, has been appointed the official representative of the American Institute of Mining and Metallurgical Engineers to attend the International Congress of Engineering at Rio de Janeiro, Brazil, next September.

E. C. Herman has been appointed head of the benzol department of the Barrett Co., 40 Rector street, New York, succeeding C. W. Force, resigned. Mr. Herman has been associated with the Barrett Co. for more than 11 years and has been manager of the chemical department. He is succeeded by R. P. Dunning.

WILLIAM E. HOBLITZELLE
Vice president of the Duquesne Steel Foundry Co. who becomes president and general manager of the Smith & Davis Mfg. Co., St. Louis

R. M. Connell, of Kansas City, Mo., has been appointed trade ocmmissioner for Sao Paulo and southern Brazil, by the American bureau of foreign and domestic commerce. Mr. Connell leaves July 30 for his post. He has been assistant trade commissioner in Mexico City the past year and for several months acted as commercial attache.

F. W. Carter, assistant manager of the heavy traction division, railway department, of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has resigned to become president of the Louisville Frog & Switch Co., Louisville, Ky. Mr. Carter was graduated in electrical engineering from the Virginia Military institute in 1912 and in the same year entered the employ of the Westinghouse company.

J. T. Chidsey, president of the Root Co., Bristol, Conn., manufacturer of automatic counters, hinges and stampings, has been elected to the presidency of the American Piano Hammer Co., Inc. Mr. Chidsey also is president of the American Piano Supply Co., New York, of the Chidsey Co., New York, of the chamber of commerce of Bristol. The American Piano Hammer Co. has been formed to combine the hammer departments of the Crane Felt Co., Belvidere, N. J., and the new piano hammer shop started last year at Bristol, by the American Piano Supply Co., New York, with the equipment purchased when the latter acquired the hammer business of C. W. House & Sons. Headquarters of the new company will be in Belvidere. W. C. Hess, vice president of the new company, is also vice president of the American Piano Supply Co.

Col. Arthur S. Dwight and Charles F. Rand, president and treasurer respectively, of the American Institute of Mining and Metallurgical Engineers, have been made chevaliers of the Legion of Honor, by the French government, according to announcement by Gaston Liebert, French Consul General in New York. The cross of the order, bestowed for distinguished service during the war, was conferred by M. Liebert at a luncheon at the Engineers club, New York, July 20. Col. Dwight helped organize the first reserve engineer regiment which as the Eleventh Engineers was the first unit of the American Expeditionary Force to go into action. He was decorated with the distinguished service order by the British and was cited in orders by General Pershing. Mr. Rand discovered large iron ore deposits on the north coast of Cuba and built the Barraco railroad there. In 1913, King Alfonso, of Spain, decorated him with the grand cross of knight commander of the Order of Isabella Catolica.

Approves Steel Mergers

(Concluded from Page 253)

district Midvale, 7945 tons; Republic, 4922 tons; Inland, 1009 tons. In the Pacific coast district Midvale, 1526 tons; Republic, 152 tons; Inland, 630.

"With respect to old rail bars Republic sold 1219 tons in the New England and eastern districts; Inland none at all. In the western district the sales were: Republic, 34,366 tons and Inland, 35,868 tons; in the southern district Republic, 1464 tons and Inland, 671 tons.

"Still using 1920 figures as a basis, of the entire steel tonnage marketed by Midvale 14.45 per cent was represented by merchant bars; in the case of the Republic 34.37 per cent and in the case of the Inland 16.83 per cent.

"Total production of merchant bars in the United States in 1920 amounted to 7,268,313 tons. Midvale's contribution was 2.72 per cent, Republic's 4.77 per cent, Inland's 1.75 per cent or 9.24 per cent for all three.

"Will a merger of these companies violate the Act of July 2, 1890, commonly known as the antitrust act?

"I see nothing in the proposed merger that offends this act. In my opinion there is not the slightest ground for supposing that it will result in any restrant of trade or monopolistic control. The plants of these companies are widely scattered; and my investigation leads to but one conclusion, and that is that the underlying purpose of this combination is not to acquire a monopoly or to restrain trade, but to enable the new company more effectually to compete with the United States Steel Corp. Its formation has, I believe, been in a great measure prompted by the heavy losses which all of these companies sustained following the marked depression in the steel industry which began over a year ago. These losses, aggregating many millions of dollars, have naturally induced these companies to devise methods of cheapening the production, sale and distribution of their products. By owning plants that are widely scattered, where production can take place in accordance with the needs of the community lying closest to the plants; by manufacturing products at plants advantageously located to ore supplies;' by reducing overhead expenses; and by eliminating unnecessary sales agencies, substantial economies can be effected by this three-company merger.

"Will a merger of these companies violate the Act of Oct. 15, 1914, commonly known as the Clayton act?

"What these companies plan to do is to merge Inland with Midvale and to acquire outright the physical assets of Republic. I fail to discover any ground for asserting that the Clayton act will be violated.

"Will a merger of these companies violate the Act of April 10, 1918, commonly known as the Webb act?

"As in the case of the other merger, these companies too belong to an association formed to handle export trade alone and functioning under the permission which this act gives. In my opinion it is impossible to conceive how a merger of these companies will in any way offend this act.

"Will a merger of these companies violate the Act of Sept. 26, 1914, commonly known as the Federal Trade Commission act?

"Under a like heading in dealing with the other merger I have pointed out the impropriety of my expressing any opinion upon this question. For exactly the same reasons I must pursue a similar course here."

Voices Necessity of 3-Company Union

THOMAS L. CHADBOURNE, the attorney who negotiated the Midvale-Republic Inland merger, last week was in Washington to discuss with the commission certain facts regarding the merger. Mr. Chadbourne said the proposed organization had never been discussed with any of the officials or directors of the United States Steel Corp. and that its approval or disapproval had never been asked or wanted. Asked whether there was any intention to combine with the Bethlehem, Lackawanna, Youngstown, Brier Hill or Steel & Tube of America, Mr. Chadbourne replied there are no negotiations pending with any of these and no thought of any negotiations.

Regarding the merger itself, Mr. Chadbourne said:

"At the end of the war inflation, October, 1920, the steel producing capacity of the country was overbuilt from 30 to 40 per cent beyond what could reasonably be expected to be the consuming capacity for several years to come. During the succeeding year and a half the steel companies produced between 30 and 40 per cent of their capacity and the independent companies lost many millions of dollars. The United States Steel Corp. during this period made a profit. This was due to its advantages in cheaper transportation of raw materials, a greater diversification of products; advantageous location of plants, and cheaper selling and administration costs because of larger operation under one management.

"The independent companies enjoy none of these advantages, and to secure them they must do one of two things, either build plants supplemental to their own in different localities throughout the country, or combine their properties, or some of them, under one management so as to overcome the handicap to some extent. The first alternative would involve great expenditures of capital, which it would be difficult or impossible to raise because additional building would add to the already serious situation of over-production.

"Unification of the Midvale-Republic-Inland companies will produce a unit having plants in Coatesville and Johnstown, Pa.; Youngstown and Niles, O.; Chicago and Birmingham, Ala. Its product will be much more diversified than any one of the companies, and it will be in a position to stock steel products in principal markets of the country.

"The combination of these three companies will not disturb competition in the steel industry. The output of the three companies is only 7½ per cent of the country's production. Some products of all three companies, or of some two of them, meet at common points or are sold within the same state. This is true, for instance, of structural shapes, plates, bars and sheets.

"If we take the actual shipments of the three companies which might have been considered competitive, say in the year 1920, and compare them with the potential competition from all other companies for that same year, we find that unification of the three companies might have eliminated competition in structural shapes to the extent of 65/100ths of one per cent; plates to the extent of 1.07 per cent; bars to the extent of 8/10 per cent; and sheets to the extent of 31/100ths of one per cent. In other words, the unification of these three companies would leave the following percentage of the total production of the United States in the field of competition: structural shapes, 99.35; plates, 98.93; bars, 99.20; and sheets, 99.69.

"The men responsible for this unification realize they can only hope by the resulting economies to cut off part of the cost differential of from $3 to $5 now enjoyed by the Steel corporation, so we have planned a most conservative corporate structure in order that our interest charges shall be lower than the Steel corporation's. They will be about $1.41 per ingot ton against the corporation's $2.30."

Great Britain Is Buying Austrian Magnesite

Washington, July 25.—Although the Austrian steel industry is dull there is no decrease in the sales of magnesite, according to a report from Consul Foster, Vienna, to the department of commerce. The Vienna press states that this is due to increased export sales.

Recently an agreement has been made between the Styrian magnesite shareholding company and a German group which assures to the Germans for a number of years the necessary supplies of magnesite. Last year exports of this mineral increased by 80,000 metric tons and this will probably be exceeded this year. Ninety per cent of the magnesite production is exported.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

EQUIPMENT with which to do all of its own enameling will be installed by the Roberts & Mander Stove Co., Philadelphia, in its new addition now under construction at Hatboro, Pa. The building will be 128 x 155 feet, brick and steel, monitor type roof over oven section and two stories at other end. Plans call for completion of the building Oct. 1 with operations to begin on sheet iron Oct. 15 and on cast iron Jan. 1. The plant will require the usual enameling outfit including pickling plant, pebble mills, sand blast equipment, ovens, spraying booths, etc. Clarence V. Roberts is president of the company, Stanley Crady secretary and Wallace E. Stephen treasurer.

* * *

THE new foundry of the Rothwell Bros. Foundry, Swansea, Mass., is making a specialty of gray iron castings, etc.

* * *

ROBERT P. O'BRIEN, who operates a pattern works at 86 Calverly street, Providence, R. I., has added a brass foundry which now is in operation. He makes wood and metal patterns and brass, bronze and aluminum castings.

* * *

REPAIRS occasioned by a fire which caused slight damage to the plant of the Berridge Shear Co., Sturgis, Mich., have been completed. The plant again is in operation after only a brief interruption, according to R. D. Strang, secretary and general manager. Other officers of the company are: President, W. C. Grobhiser; vice president, M. E. Aulsbrook; and treasurer, J. C. Fretter.

* * *

DELAY encountered by the J. C. Osler Motor Co., Portland, Oreg., in the perfection of a lock and nut for motor cars soon are expected to be overcome and production started. The company plans to manufacture its product in Oakland, Cal., and Portland, and later perhaps in Chicago. Some special machinery is now being built and others may be acquired later. Officers of the company are: President, J. C. Osler; vice president, E. E. Patterson; and secretaary, D. M. Lindeman.

* * *

ORGANIZATION of the Common Sense Radius Rod Co. of New Jersey, with principal offices at 146 West Broadway, Salem, N. J., has been effected to distribute radius rods on the Atlantic coast. The rods are the product of the Silvers Mfg. Co., Salem, O. Officers of the new company are: President, D. S. Craven; vice president, N. C. Bonham; treasurer, R. H. Butcher; and secretary, H. D. Young.

* * *

AN ADDITIONAL galvanizing unit has been placed in operation by the Dominion Sheet Metal Corp., Ltd., Hamilton, Ont., which specializes in galvanized sheets. The new unit gives the company a total capacity of 22,500 tons of sheets annually. The plant has been in full operation since March 1 and due to heavy Canadian crops steady operation for the remainder of the year is expected, according to A. T. Enlow, president.

* * *

ARRANGEMENTS have been completed by which the Bastian-Blessing Co., West Austin avenue at LaSalle street, Chicago, has taken over the entire output of soldering equipment, preheaters, acetylene generators, etc., of the St. Paul Welding & Mfg. Co., St. Paul. The latter company will be service distributors for the Northwest for the Bastian-Blessing Co., which manufactures welding and cutting apparatus. E. L. Mills is sales manager of the Bastian-Blessing Co.

* * *

DUE to the increasingly favorable outlook in the automobile trade, particularly passenger cars, the Nash Motor Co., Kenosha, Wis., has enlarged upon its plant extension program for the Milwaukee 4-cylinder car works. Contracts awarded within the week for a new sheet metal shop, body works and office building have been increased about 33 1/3 per cent. The new building will be 200 x 950 feet in size, part two and three stories high, of brick and steel. The Worden-Allen Co., Milwaukee, originally awarded a contract for fabricating and erecting the building, has been ordered to increase the requirement from 400 to 600 tons. The architect and engineer is H. K. Ferguson, Cleveland, and the general contractor is the Theodore Stark Co., 130 Muskego avenue, Milwaukee. The capacity of the Milwaukee plant, which builds Nash 4-cylinder cars exclusively, will be increased from 60 a day to more than 100 when the new shops are finished about Oct. 15.

* * *

EDWARD C. DILWORTH has established headquarters at 302 Walsh building, Pittsburgh, as consulting engineer, in connection with industrial buildings, warehouses, retaining walls, bridges, reinforced concrete work, foundations, etc. Mr. Dilworth for a number of years was designing and estimating engineer with the American Bridge Co., Pittsburgh, leaving in 1914 to become affiliated with the Pittsburgh-Des Moines Steel Co., Pittsburgh, as manager of sales.

Steelworks Take 73 Per Cent of Fluorspar

Washington, July 25.—Steelworks in 1921 took 25,553 net tons or 73.09 per cent of the fluorspar shipped in the United States, compared with 151,311 tons or 81.01 per cent in 1920, according to the federal geological survey. The total value of the fluorspar shipped to steelworkers in 1921 was $407,230 and in 1920, $3,393,246. The average price paid per ton was $15.94 in 1921 and $22.43 in 1920. The average price paid for all domestic shipments in 1921 was $20.71 and in 1920, $25.29.

Shipments from domestic mines in 1921 totaled 59,913 net tons, as against 201,372 in 1920. Illinois produced 41.57 per cent in 1921 and 62.05 in 1920, leading in both years. Actual production of fluorspar in 1921 amounted to 34,960 net tons valued at $724,094, compared with 186,778 tons valued at $4,718,547 in 1920. Stocks at the end of 1921 at mines or shipping points in the United States totaled 58,659 tons, and at the end of 1920, 41,784 tons.

Employment Gain

Continues in Iron and Steel Industry—Average Wage Higher

Washington, July 25.—June was another month of increase for the iron and steel industry, those works reporting to the bureau of labor statistics showing a personnel larger in June than May by 5.3 per cent and payrolls heavier by 6.7 per cent. Comparing June this year with June last year, the increase in personnel is 32.1 per cent and in payrolls 40.7 per cent.

This improvement in the iron and steel industry in June was in keeping with the general advance in industry. Of the 12 separate industries reporting to the bureau all but two were employing more persons in June than in May while all but one had larger payrolls in June than in May. Eight of the 12 industries were employing more persons in June this year than in June last year, while six had larger payrolls this June.

One hundred and six iron and steel works reporting for a half-month period for June and May revealed the following improvement:

	Number on payroll	Per cent Increase	Amount of payrolls	Per Cent Increase
June	144,426	5.3	$6,847,174	6.7
May	137,170	..	3,608,569	..

Reports for a half-month period from the same 110 works for June, 1922, and June 1921, show:

	Number on payroll	Per cent Increase	Amount of payrolls	Per Cent Increase
June, 1922	146,087	32.1	$6,906,566	40.7
June, 1921	110,572	..	4,907,968	..

The average wage paid in the iron and steel industry in June was $94.84, an increase of $1.04 over the $93.80 of May. In the automobile industry, in which employment was 7.2 per cent greater in June than in May and payrolls were 7.7 per cent heavier, the average wage in June was only $133.64 against $135.72 in May. The car building and repairing industry, which reported an increase of 6.9 per cent in personnel in June with a gain of 10.6 per cent in payrolls, paid an average wage of $120.06 in June compared with $115.70 in May. For these major industries the average monthly wages in the first half of this year have been:

	Iron and steel	Automobile	Car building and repairing	Bituminous coal mining
June	$94.84	$133.64	$120.06	Strike
May	93.80	135.72	115.70	Strike
April	88.12	128.28	114.78	Strike
March	89.02	113.12	114.82	$147.64
Feb.	84.90	108.20	117.26	136.08
Jan.	78.74	70.40	103.60	108.30

Net earnings of $35,116,481 before charges and net sales of $218,490,887 are reported by the General Motors Co. for the first half 1922. After all charges the balance is $26,839,391.

Living Costs Compared

(Percentage over July, 1914)

July, 1914 to	All items	Food	Shelter	Clothing	Fuel and light	Sundries
Jan., 1920	90.2	97	43	170	90	77
Feb., 1920	93.5	101	45	177	49	78
Mar., 1920	94.8	100	49	177	49	83
Apr., 1920	96.6	100	50	188	51	83
May, 1920	101.6	111	51	187	55	83
June, 1920	103.0	115	51	176	61	85
July, 1920	104.5	119	58	166	66	85
Aug., 1920	103.2	119	58	155	69	85
Sept., 1920	99.4	107	59	155	78	88
Oct., 1920	97.3	103	59	148	83	90
Nov., 1920	93.1	93	66	128	100	92
Dec., 1920	90.0	93	66	105	100	92
Jan., 1921	81.2	78	66	87	100	92
Feb., 1921	76.3	72	66	74	98	90
Mar., 1921	68.7	56	71	74	87	85
Apr., 1921	67.6	56	71	69	79	85
May, 1921	65.7	52	71	68	78	85
June, 1921	61.9	45	71	62	78	85
July, 1921	63.1	48	69	64	79	85
Aug., 1921	62.0	48	69	59	79	83
Sept., 1921	64.8	55	69	57	79	83
Oct., 1921	63.7	53	69	60	79	80
Nov., 1921	63.0	..	69	61	79	78
Dec., 1921	62.7	52	69	57	79	78
Jan., 1922	61.4	50	69	56	78	78
Feb., 1922	57.7	42	69	56	77	77
Mar., 1922	54.7	39	65	56	74	74
Apr., 1922	54.8	39	65	55	74	74
May, 1922	54.9	39	65	56	74	74
June, 1922	55.4	41	65	53	74	74

Cost of Living Remains Nearly Stationary

Cost of living for wage earners' families in the United States on June 15 was substantially the same as on May 15, according to the National Industrial Conference board's survey. In the month food advanced slightly, and clothing was reduced a little. These were the only changes in the various items making up the budget, and they nearly balanced one another. The result was that there was an increase of five-tenths of one point, or three-tenths of 1 per cent in the total cost. On June 15 the cost of living was 55.4 per cent higher than in July, 1914. Between July, 1920, when the peak of the rise in cost of living since 1914 was reached, and June, 1922, the cost of living dropped 49.1 points, or 24 per cent. The accompanying table gives further details.

Worker, Attacked, Sues Union for Damages

The average of union molders' wages in nine foundry centers of the United States on July 1 was 73 cents per hour. The average is substantially the same as on June 1. The only change is a reduction from $6.40 to $6 for an 8-hour day in New Orleans. Strikes continue in Boston and Cleveland.

An incident in the Cleveland strike is that a molder who was attacked by 15 strike sympathizers and injured so that he had to be taken to a hospital has started action against International Molders' union No. 218 for $5000 damages under the Coronado case decision. Employers also are suing the union to compel members to refrain from intimidating workers, and from acts of violence.

Issue Questionnaire on Compensation Act

Ohio employers are asked to express their views on the present workmen's compensation act in a questionnaire sent broadcast by the impartial committee selected by the Cincinnati chamber of commerce to investigate and collate data on the subject. Public hearings have been held in Cincinnati, Dayton, Springfield, Columbus, Toledo, Cleveland, Youngstown and Canton by the committee, of which H. D. Martin, of the Pollak Steel Co., Cincinnati, is chairman. As the chamber expects to make definite recommendations to the state legislature eventually, all employers are urged to co-operate in formulating them, by answering the following questions:

1. Should the cost of operating the workmen's compensation act be borne in part by the state and employers or all by the employers or all by the state? Will you subscribe to an increased appropriation for the administration of the workmen's compensation act?

2. Should the compensation act, since it is compulsory, protect the employer against suits at common law? Will you subscribe to a constitutional amendment which will provide this?

3. Should the employe be accorded the right to appeal and the employer denied it?

4. If a self-insurer, what prompted it?

5. Are the present rates charged satisfactory? Reason?

6. Should the physical condition of the employer's plant be considered when making the rates?

7. Do your employes receive compensation promptly?

8. What assistance does the industrial commission or department of industrial relations give which aids in the prevention of accidents? Will you subscribe to a comprehensive accident campaign?

9. Is a compulsory "state fund" desirable?

10. Should the compensation levels be increased?

11. Can the present system be improved? If so, how?

12. Should the compensation law apply to employers employing less than five men?

13. How should the Ohio workmen's compensation act be administered?

Tool Users Postpone Purchases

Coal and Rail Strikes Continue To Act as Market Hindrances—Prospective Railroad Demand Is Large but Immediate Purchasing Is Not Likely—Crane Orders Still for Single Installations

USERS of machine tools and shop equipment continue to defer purchases, although in some districts the buying of the past week has been more spirited than that of the preceding one. The coal and rail strikes continue to act as a deterrent to a resumption of tool buying, especially on the part of the railroads. However, despite the fact the railroads are showing but little interest in equipment, the Atchison, Topeka & Santa Fe continues to buy, while during the week the New York Central, the Pennsylvania, the Chicago, Milwaukee & St. Paul railroads and the Pittsburgh Railways Co. entered the market with small inquiries. Other active railroad inquiries are from the Chicago & Northwestern and the Chicago, Rock Island & Pacific.

Vocational school buying and inquiring has been of interest during the week. The Youngstown, O., school board purchased several tools while the Pittsburgh board of education closed on eight machines. The Cleveland board of education rejected bids on its requirements and has called for new tenders. In addition to this lists are being prepared of the requirements of the Vandergrift and McKeesport, Pa., high schools.

Some fair business is being placed by the automotive industry although practically all orders are for single machines. Secondhand machinery continues to be favored by buyers, one Cleveland dealer reporting the sale of 10 used tools to one buyer. No additional price advances have been reported but it is understood secondhand tool quotations today are stronger than at any time in more than a year. This is the result of the growing scarcity of good used machinery.

Buyers of cranes in the majority of instances are confining purchases to single installations. However, several orders involved more as can be seen from the accompanying list of awards. Crane buying of the week includes an order for six locomotive cranes and two orders for four electric overhead cranes.

Orders for Machine Tools Are Few and Scattered

NEW YORK, July 25.—Machine tool buying is small and scattered. Inquiry is light, with little in prospect in the immediate future. The railroads in this district are expected to show little interest until after the strike. Aside from an inquiry from the New York Central for a planer, special milling machine, and a radial drill, and one from the Pennsylvania for two machines, no demand is coming out from Eastern railroads. However, a manufacturer in this district, the Niles-Bement-Pond Co., 111 Broadway, New York, has booked an order for 10 or 12 machines for the Atchison, Topeka & Santa Fe. This manufacturer also has received an order from the General Electric Co., Schenectady, N. Y. for a radial drill, and from the American Locomotive Co., this city, for one tool.

Crane buying includes an order for six locomotive cranes, and two for four electric overhead cranes each. Considering the conveying equipment market as a whole, there is a fairly good demand.

Tool Demand More Spirited

CLEVELAND, July 25.—While demand for machine tools and shop equipment is not sizable, buying during the week just past has been more spirited than in the preceding one. The effect of the rail and coal strikes on orders still is to be seen. Automotive demand is by far the most active. The motor car industry, both in this city and Detroit, is purchasing considerable equipment in the aggregate, although individual orders rarely call for more than one tool. Automobile accessory makers and garage operators are furnishing a fair amount of business.

Probably the largest sale of the week was one of secondhand equipment, involving 10 automatic turret lathes, which were purchased from the Empire Machinery Exchange Co., Cleveland, by a New York interest. A local automotive interest purchased six tools during the week including two lathes, a grinder and a screw machine. A St. Louis interest during the past few days purchased a large lathe from a local dealer. In addition numerous single tool orders were reported, including one of a boring mill and another of a milling machine. During the next few days a large machinery dealer here expected to obtain an order for two large lathes, negotiations for which are now in progress.

Single tool inquiries are numerous but outside of the list of the Cleveland board of education and those of the various railroads, large inquiries are unheard of here. It is understood the local board of education has rejected all bids on the equipment for the Patrick Henry and Audubon high schools and will take new bids next month. Several local dealers are understood to have received some of the equipment orders from the Youngstown, O. school board, although it is believed the most of this equipment will be purchased from Pittsburgh dealers. Action on the various railroad lists in the market here has been deferred until after the rail strike has been settled.

Machine tool prices are firm. While additional price advances have not been noted within the past two weeks, dealers in used equipment report their prices are firmer than at any time in more than a year. This is brought about through the growing scarcity of good used tools and the tendency of new machine tool prices to advance. While the difficulties of transportation is acting as a

hindrance to buying, dealers without exception state that prices are to no extent a factor in holding up buying. While many companies which had placed equipment on the market have withdrawn it and put the tools back into production, some firms continue to dispose of excess equipment. An instance of this is the sale of about 10 machines during the past week by the Lakewood Engineering Co., Cleveland, to a Pittsburgh dealer.

Sales Volume Is Lacking

MILWAUKEE, July 25.—Progress continues to be made slowly, but steadily, in sales of machine tools, despite the handicaps arising out of the strike of railroad shopmen and the coal miners. The larger machinery and machine shops have on hand supplies ordinarily lasting from one to three months and depend entirely upon fuel still to come up the lakes for the fall and winter need. Tool business is still being handled without difficulty, for demands are well within the limits of capacity. It is believed that the early disposition of the rail labor trouble will be one of the biggest factors in restoring volume, for railroad buying appears to be held up generally by the uncertainty of the shop situation. In the meantime some fair business is coming out of the automobile industry, while the inquiry from makers of farm equipment is increasing. Industrial construction is going on at a fair rate, bringing out tool needs of some proportions, but only the aggregate imparts the impression of volume as yet, as individual orders are small.

Improvement in Demand Is Noted

TORONTO, Ont., July 25.—Dealers and manufacturers report a slight improvement in demand for machine tools during the week. Inquiries are coming in on a larger scale and it is the general opinion that business for the last six months will show a decided improvement over that for the first half. A number of companies with industrial plants under construction are expected to enter the market with large lists. The demand for woodworking equipment continues strong and there is a fairly good movement in pulp and paper plant equipment. Iron and steelworking tools are backward, but some improvement was noted in these lines during the week, and from the automobile industry dealers are closing some very good orders for one or two machines or tools. Municipal governing bodies continue to enter the market for equipment for electric plants, waterworks and sewage plants, etc. C. N. Tingle, secretary-treasurer of Hanna, Alta., will receive bids until Aug. 7, for the installation of one 100-kilowatt generator and exciter, direct-connected to a compound steam engine to be erected in the power house; one 50-kilowatt, similar unit; two 150-horsepower return tubular or water tube boilers and accessories, including mechanical stoker; also switchboard and street lighting equipment, transformers and copper wire. The town Council of Alvinston, John Irving clerk, plans a pump house and the installation of electrically operated pumps. The Fort William Paper Co., Mission street, Fort William, Ont., will build a mill. Plans are being prepared for an addition to the plant of the E. B. Eddy Co., Ltd., Bridge street, Hull, Que. John Gray, Coilingwood, Ont., has organized the Georgian Bay Spring & Metal Co.

Strikes Slow Up Buying Movement

PITTSBURGH, July 25.—While the combined railroad and coal strikes have slowed up buying of machine tools and equipment generally, several sales have been consummated, which, are thought to show a trend toward the buying movement which would ensue were there no labor disturbances. Several schools lists have been closed and a few additional crane awards are noted. A few new crane inquiries continue to come out from time to time and prices are getting stronger; some buyers already have withdrawn their outstanding proposals and are inaugurating levels at least 10 per cent higher.

In connection with machine tools, the Pittsburgh board

Crane Awards and Inquiries of the Week

Orders Placed

One 1-ton electric traveling crane for Schaefs Foundry, New Orleans, to the Northern Engineering Works, Detroit.

Two 10-ton cranes with 50-foot spans and one 24-ton crane with 50-foot span for the Magnolia Petroleum Co., Texas, to the Northern Engineering Works, Detroit.

One 3-motor, 5-ton electric traveling crane with 37-foot span for the Lamb Machine Co., to the Northern Engineering Works, Detroit.

Two 5-ton cranes with 51-foot spans, for the Bartlett-Hayward Co., Baltimore, to the Chesapeake Iron Works, Baltimore.

One 15-ton crane for a manufacturer located near Chicago.

One 7½-ton crane for the Follansbee Bros. Co., Follansbee, W. Va., to the Northern Engineering Works, Detroit.

One 2-ton 3-motor 41-foot span crane for the Wheeling Bronze Casting Co., Wheeling, W. Va., to the Shepard Electric Crane & Hoist Co.

One 3-ton electric hoist for the Garford Foundries Co., Elyria, O., to the Shepard Electric Crane & Hoist Co.

Two additional 2-ton coal loading boom hoists for the Marion Machine Foundry & Supply Co., Scottdale, Pa., to the Shepard Electric Crane & Hoist Co.

One 3-ton 2-motor pulpit controlled hoist for the Columbia Steel & Shafting Co., Rankin, Pa., to the Shepard Electric Crane & Hoist Co.

Three 1-ton electric hoists for the Jones & Laughlin Steel Co., Southside, Pittsburgh, to the Shepard Electric Crane & Hoist Co.

One 20-horsepower car hauling winch for the Carnegie Steel Co., New Castle, Pa., to the Shepard Electric Crane & Hoist Co.

Ten small hoists through the Beckwith Machinery Co., to various customers in the Pittsburgh territory to the Shepard Electric Crane & Hoist Co.

One 10-ton crane for the American Rolling Mill Co. to an Ohio builder.

One 20-ton 3-motor electric traveling crane for the Milwaukee Public Sewerage commission, to the Milwaukee Electric Crane & Mfg. Co.

Four electric overhead cranes for Frick Co., Waynesboro, Pa., as follows: One 25-ton, 4-motor crane, 75-foot span, to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; one 10-ton crane, 74-foot span, and two 5-ton cranes, with 35-foot span, to Marius Bros., Philadelphia.

Four electric cranes for Monitor Bi-loop Co., Lancaster, Pa., as follows: One 15-ton crane, 58-foot span, one 5-ton, 47-foot span, and two 5-ton, 27-foot span, to the Northern Engineering Works, Detroit.

Six locomotive cranes, said to range around 20 tons capacity, for Keystone State Construction Co., to Industrial Works, Bay City, Mich.; awarded through Holbrook, Cabot & Rollins, Philadelphia.

One used Erie steam shovel, ¾-yard capacity, for Berpoline Quarry Co., New Haven, Conn., to Philip T. King, 30 Church street, New York City.

One 20-ton used Ohio locomotive crane, 50-foot boom, for H. D. Streicher Co., Inc., Toledo, for operation in Oil City, Pa., to Philip T. King, 30 Church street, New York City.

One 160-ton wrecking crane for the Canadian Pacific railroad to the Industrial Works, Bay City, Mich.

One 150-ton wrecking crane for the Grand Trunk railway, to the Industrial Works, Bay City, Mich.

One 15-ton locomotive crane, with 50-foot boom for Duluth Superior Dredging Co., Superior, Wis., to Industrial Works, Bay City, Mich.

Orders Pending

One 20-ton crane with 35-foot span, for the Chicago, Milwaukee & St. Paul railroad; award expected this week.

Two 15-ton cranes and eight 1-ton jib cranes for the Arctic Ice Machine Co., Canton, O.; bids all in.

One 10-ton crane with special features for the Standard Steel Spring Co., Coraopolis, Pa.; action deferred.

One 10-ton crane for the Universal Steel Co., Bridgeport, Pa.; indefinitely postponed.

Several cranes including 10 and 15-ton capacity for the Jones & Laughlin Steel Co., South Side works, Pittsburgh; bids being taken.

One 10-ton electric traveling crane, 50-foot span, McGann Mfg. Co., York, Pa.; bids all in.

Ladle cranes, open-hearth equipment, International Harvester Co., Chicago; bids being taken.

One 5-ton electric crane, 36-foot 6-inch span, for the Oneonta Iron Works, Inc., Oneonta, N. Y.

One 10-ton electric crane with 40-foot span, for Rodgers & Haggerty, Inc., 70 East Forty-fifth street, New York City.

One 5-ton handpower crane, with 46-foot span, for Wirada & Hall Acid Works, Brooklyn.

One 12-ton handpower crane, with 22-foot span, for Dryden Paper Co., Ltd., Dryden, Ontario, Can.; H. S. Ferguson, 200 Fifth avenue, New York City, engineer in charge.

of education closed on six 12-inch by 5-foot lathes with one seller here; the Reliance Machinery Sales Co. was awarded the 16-inch shaper and the Somers, Fitler & Todd Co. received the award of the saw table, together with some small equipment. The board deferred purchases of the planer, band saw and four lathes. The Youngstown, O., board of education closed on several items distributed among three sellers here as well as a few in Cleveland and other districts. A new list is being prepared by the Vandergrift, Pa., high school, and a band saw and electric grinder is to be bought for the McKeesport, Pa., high school. Other sales of the week include a keyseater, a 19-inch by 14-foot lathe, a milling machine, a drill press, and some smaller equipment, together with some single items in larger tools. Several new inquiries for single installations are out but the only sizable inquiry is that from the Pittsburgh Railways Co. for six or eight items, including lathes, grinders, etc., for its machine shop. A hydraulic press will probably be purchased by the Youngstown Steel Co., Youngstown, O., for Warren, O., in addition to other equipment. The Champion Tool Co., Meadville, Pa., and the National Metal Products Co., Pittsburgh are prospective equipment purchasers since both are building additions.

Used Tools Are in Better Demand

CHICAGO, July 25.—The price tendency of machine tools continues upward. Despite contradictory reports trading has shown more life during the last week than a week ago. Used tool dealers report a greater diversity of inquiry and many sales of individual tools at decidedly favorable figures have been made. Some secondhand equipment dealers report better sales than in several weeks, the tools in most cases going to relatively small firms manufacturing small iron and steel specialties. The strike interferes with railroad buying. Indications previous to the strike pointed to a good market in the railway field, and dealers therefore are anxiously watching developments. Four or five of the western roads are known to be urgently in need of tools and in fact there are about half a dozen railway tool lists before the trade at the present time. Of these the Chicago & Northwestern, the Chicago, Rock Island & Pacific and the Chicago, Milwaukee & St. Paul railroads are the most active. The latter list just came out within the last few days and covers six tools and miscellaneous equipment. Sheet and plateworking machinery continues in good demand. The sale of three electric riveting machines to a fabricator is reported.

Buying Activity Is Retarded

BOSTON, July 25.—The railroad strike is having a tendency to retard activity in the machinery market. Boston dealers report many buyers are showing a disposition to hold off on purchases until the situation is clearer, but they also add that relatively the situation here is not so bad as their western offices report it. Railroads in particular have shown most hesitancy on this account. Inquiries are somewhat broader this week but no large lists are out and most of them are for small tools. The usual vocational school purchases still are prominent.

Practically no large business has been closed during the week. A considerable volume of small tools is reported closed on by one dealer to a widely diversified group of manufacturers. A Providence manufacturer of textile machinery has taken a 15-inch shaper and the sale of a milling machine to a vocational school is reported. Several inquiries are reported for single orders of lathes for tool room use. No changes in prices have been announced during the week; although the local trade is inclined to look for further advances.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

GADSDEN, ALA.—The Stringer Bros., makers of pipe, specialties, etc., plan a 1-story building, 60 x 100 feet, with an extension, 40 x 40 feet.

MERIDEN, CONN.—The Griswold, Richmond & Glock Co., maker of sheet metal, has increased its capital stock from $50,000 to $100,000.

COCOA, FLA.—The North Shore Electric Co. has been incorporated with $10,000 capital stock, by Frank L. Brown, N. B. Brown and William H. Berg.

TALLAHASSEE, FLA.—The Hill City Mfg. Co., metal products, has been organized by A. Wahnish, A. C. Spiller and George V. Stein.

CHICAGO—The Community Power & Light Co. has increased its capital stock from $1,300,000 to $1,500,000.

CHICAGO—The Western Pipe & Steel Co., of Illinois, has increased its capital stock from $100,000 to $200,000.

CHICAGO—The Great Lakes Iron & Metal Co., 110 South Dearborn street, has been incorporated with $10,000 capital stock, by Donnie Evans, Fred Evans and Maurice A. Getz. The company is represented by Andrews & Cohen, 105 West Monroe street.

CHICAGO—The Metropolitan Mfg. Co., 443 South Dearborn street, has been incorporated with $50,000 capital stock to manufacture cooking and lighting devices, etc., by Michael J. Breen, Damase J. Morin, Ludger D. Bergeron, William E. Dickson and Alphonse L. Caron.

CHICAGO—The Universal Metal Finishers' Co., 654 East Forty-seventh street, has been incorporated with 20 shares of no par value by Louis Brodo, R. E. Duffy and Stephen B. Ruzek Jr. The company is represented by Hanasen & Crow, 9205 Commercial avenue.

CHICAGO—Birk, Harrison & Co., 2457 South Loomis street, iron, steel and scrap material, have been incorporated with $25,000 capital stock by Philip Harrison, John J. Beilman, and Morris Birk. The company is represented by John J. Beilman, 1301, 105 South La Salle street.

CHICAGO—The Chicago Sashweight Corp., 322, 155 North Clark street, has been incorporated with $15,000 capital stock by William S. Newburger, Maurice C. Bandelman and James Cronin. The company is represented by Julius C. Greenbaum, 322, 165 North Clark street.

CHICAGO—The Accurate Die & Stamping Co., 487 West Thirty-first street, has been incorporated with $25,000 capital stock to manufacture and deal in metal products, by T. L. Lusk, F. A. Gingerella and John Schmidt. The company is represented by T. L. Lusk, 123 West Madison street.

CHICAGO—The Advance Mfg. & Supply Co., 205 West Madison street, has been incorporated with $1000 capital stock, to manufacture and deal in metal work, etc., by William Jenkins, A. E. Folger, B. F. Schmidt, C. L. Safford, G. A. J. Meyer, C. C. Gibson and Louis

Melind. The company is represented by Ela, Grover & March, 140 North Dearborn street.

CHICAGO—Abbott I. Wright Co., 19 West Jackson boulevard, has been incorporated with $10,000 capital stock to deal in engineering specialties, steel, asbestos, gaskets, etc., by Abbott L. Wright, Margaret H. Wright and Sewell L. Bartlett. The company is represented by G. R. Short, 7051 Jeffrey avenue.

CHICAGO—The Mayson Automotive Equipment Corp., 5609 Harper avenue, has been incorporated with $10,000 capital stock to manufacture and deal in automobile equipment, by Harry R. Jackson, Florence May, Henry A. May and others. The company is represented by Darrow, Sieman, Holley & Carlin, 1310 140 North Dearborn street.

CHICAGO—The Green Gage Co., 2809 West Lake street, has been incorporated with 250 shares of no par value, to manufacture and deal in gages, devices, etc., by R. M. Cutting, L. C. Huck, A. S. Green, T. T. Bartolme, Andrew H. Green and others. The company is represented by Gallagher, Kohlsat, Rinaker & Wilkinson, 11 South La Salle street.

GRANITE CITY, ILL.—The Hoyt Metal Co. plans a building, 1-story, 141 x 200 feet, to cost about $75,000.

LA SALLE, ILL.—The Barnes Zinc Products Co., Ninth and Sterling streets, has been incorporated with $100,000 capital stock to manufacture and deal in zinc, etc. The company is represented by Winston, Strawn & Shaw, First National Bank building.

ROCKFORD, ILL.—The Rockford Malleable Iron Works will start work soon on a foundry building, 1-story, 150 x 200 feet, to cost about $120,000.

SOUTH CHICAGO, ILL.—The Star & Crescent Milling Co., 108 South La Salle street, plans a power plant, 1-story, 24 x 42 feet.

STREATOR, ILL.—The Munster Machine Co., R.F.D., No. 1, has been incorporated with $1600 capital stock by L. Tombaugh, Frank H. Benkendorf, B. W. Cossell, Jay Kennedy and Ray McFadden. The company is represented by Boys, Osborne & Griggs, Union National Bank building.

EVANSVILLE, IND.—The Southern Indiana Gas & Electric Co. plans a plant, 1-story.

FT. WAYNE, IND.—The Ft. Wayne Tank & Pump Co. plans a manufacturing building, 1-story, 120 x 240 feet, to cost about $75,000.

GARY, IND.—The Baltimore & Ohio railroad has awarded a contract for a freight warehouse here to cost about $125,000.

INDIANAPOLIS—This city is having plans prepared for a power house, 1-story.

INDIANAPOLIS—The Zenite Metal Co. is having plans prepared for a factory building, 1-story, 100 x 200 feet, to cost about $100,000.

INDIANAPOLIS—The Merchants Light, Heat & Power Co. has leased a building, 60 x 160 feet, which it will utilize for a service and repair works.

SOUTH BEND, IND.—The Standard Castings Co. has been incorporated with $200,000 capital stock, by John N. Zigler, Charles L. Zigler and Richard A. Oglesby.

SOUTH BEND, IND.—The Highway Iron Products Co., Ligonier, Ind., is reported to have arranged to move its plant to this city and increase its capital stock from $350,000 to $700,000. The company manufactures supplies for bridges, culverts, steel structures, etc.

TERRE HAUTE, IND.—The Safety Car Coupler Co. has been incorporated with $2500 capital stock to manufacture car couplers, etc., by Frank P. Flinn, John P. Gilmour and John M. Fitzgerald.

BARBOURVILLE, KY.—The Dishman Springs Co., springs, has been incorporated with $30,000 capital stock, by W. M. Dishman, J. A. McDermott and Thomas D. Tinsley.

LEXINGTON, KY.—The Erd Mfg. Co., 117 Sherman avenue, is reported considering a plant.

LOUISVILLE, KY.—The Wood-Reinecke Electric Co. has been incorporated with $30,000 capital stock, by Biscoe Hindman, Harry I. Wood and William Reincke.

LOUISVILLE, KY.—The Moore Lighting Fixture & Mfg. Co. has been incorporated with $10,000 capital stock, by William G. Mooser, William G. Vette and Matthew Ballard.

LOUISVILLE, KY.—The General Machine Co. has been incorporated with $10,000 capital stock, by Daniel T. Gray, Claude L. Keal and Leonard P. Soate.

OWENSBORO, KY.—The MacClellan Mixer Co. has been incorporated with $12,000 capital stock, by A. D. MacClellan, D. F. Whitaker and C. E. Carpenter.

SHELBYVILLE, KY.—The Roberts Auto Spring Device Co. has been incorporated by J. D. Wimp, L. T. and J. T. Roberts.

BALTIMORE—The Republic Boiler & Radiator Co. has let contracts for plant additions to cost about $50,000.

BALTIMORE—A plant for the manufacture of concrete products will be established here by the Colonial Concrete Products Co., recently incorporated with $600,000 capital. Charles L. Talbott, George L. Jones and J. Russell Carroll are included in the incorporators.

BALTIMORE—A plant will be established here by the McLaughlin Radio & Electrical Corp., recently incorporated with a capital of $1,000,000 by George R. Allen, Rolland R. Fairfax and Alexander R. Allen. The company will specialize in radio equipment.

FROSTBURG, MD.—The Frostburg Sewer Pipe Co., Inc., plans a plant here at an estimated cost of $200,000.

ST. MICHAELS, MD.—The Maryland Can Co. has been incorporated with $300,000 capital stock, by Michael Lebowitz, David Ashman and Milton Dashiell.

BELLEVILLE, N. J.—The Thompson Machine Co. has awarded a contract for a 2-story factory building for the building of baking machinery. It will cost $150,000.

CAMDEN, N. J.—A $100,000 repair shop and showroom will be erected here by the Cadillac Automobile Co. According to plans by Lackel & Hettel, the structure will be 4-stories, 48 x 126 feet.

BROOKLYN, N. Y.—The Lion Lock Co. has been incorporated with $10,000 capital stock by A. Yurow, B. E. Lowsky and H. Levine. The company is represented by L. Horwitz, attorney, 722 Broadway.

BUFFALO—The Great Lakes Dredge & Dock Co., Morgan building, plans a repair shop here at an estimated cost of $5000.

NEW YORK—The New York Commercial Body Corp. has been incorporated with $15,000 capital stock by A. M. Bohn, J. Abramson and others. The company is represented by C. W. Philipbar, 215 Montague street.

NEW YORK—The Milford Electrolytic Iron Co. has been incorporated with $100,000 capital stock, by D. J. Ogilvie, D. Belcher and E. J. Krummel. The company is represented by T. L. Frothingham, 149 Broadway.

NEW YORK—The Harvey Instrument Co. has been incorporated to make thermometers, etc., with $10,000 capital stock by W. H. Null, B. Bagley and others. The company is represented by W. J. Blech, 2301 Creston avenue.

ROCHESTER, N. Y.—The Supreme Electric Products Corp. has been incorporated with $20,000 capital stock by J. L. Wellington, J. F. Pugam and others. The company is represented by O. Barker.

SYRACUSE, N. Y.—The Selflock Nut & Bolt Co. is reported considering the erection of plant additions.

SYRACUSE, N. Y.—The Standard Lock Corp. has been incorporated with $100,000 capital stock by J. D. Taylor, A. C. Austin and W. F. Kirkpatrick. The company is represented by Bond, Schoeneck & King.

ADA, O.—The Ohio Northern university plans a power house.

CANTON O.—The National Pressed Gear Co. has been incorporated with $100,000 capital stock by Harry W. McQuaid, Ernest G. Strong, A. L. Lewis, C. E. Runyan and F. O. Rice.

CINCINNATI—The Miller Electrical Mfg. Co. has been incorporated with $100,000 capital stock by R. M. Green, W. F. Schmudee, J. G. Morris, L. G. Gatch and A. A. Miller.

CLEVELAND—The Builders Structural Steel Co. has increased its capital stock from $108,000 to $122,000.

CLEVELAND—The Incinerator Co. has been incorporated with $2000 capital stok by C. T. McConnell, R. W. Sanborn and others.

CLEVELAND—The National Stamping Co. has been incorporated with $10,000 capital stock by A. L. Chubb, E. P. Chubb and others.

CLEVELAND—The Chemical Rubber Co. has been incorporated with $50,000 capital stock by Harry Wolpaw, M. Junke, M. Young, C. L. Brueggemyer and L. Frick.

CLEVELAND—The Cleveland Folding Machine Co., 5200 Euclid avenue, plans a factory and warehouse building, 2-stories, 96 x 180 feet, to cost $100,000.

CLEVELAND—The Standard Equipment Co., Lorain avenue and West 106th street, plans a 1-story forge shop, 60 x 200 feet, to cost $40,000.

CLEVELAND—The Specialty Iron & Wire Co. has been incorporated with $10,000 capital stock by John R. Binder, D. T. Miller, E. M. Sanders, Frank C. Sanders and Grace E. MacVeen.

COLUMBUS, O.—The White Machine Co. has been incorporated with $10,000 capital stock, by Clark White, W. A. White, L. E. Smith, J. W. Whitmer and M. L. Smith.

LORAIN, O.—The Common Sense Piston Ring Mfg. Co. has been incorporated with $25,000 capital stock by J. H. Davis, F. J. Martin, Thomas McGeachie and W. S. Baldwin.

SALEM, O.—The National Sanitary Co. is preparing plans for rebuilding its works which was recently damaged by fire.

WARREN, O.—The Commercial Galvanizing & Mfg. Co. has started work on a works building here.

BETHLEHEM, PA.—The Confederated Home Abattoirs Corp., Portland, Me., is considering the purchase of a site here for the establishment of a plant.

CORRY, PA.—The Kurtz Brass Bed & Wood Bed Co. plans extensions and improvements to its plant.

ERIE, PA.—The Erie Burial Case Co. plans a plant building, 2-stories, 50 x 200 feet, to cost about $40,000.

GREENVILLE, PA.—A permit has been granted to the Greenville Steel Car Co. to erect a building at an estimated cost of $35,000.

HAZLETON, PA.—The Atson Stabilator Co., automobile shock absorbers, has been incorporated with $10,000 capital stock, by Walter D. Green, Ira L. Reed and Edward M. List.

HIGHSPIRE, PA.—The Keystone Carbonic Gas Co. plans a factory building, 60 x 140 feet.

(Continued on Page 266)

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron..$5.95
Mesabi Bessemer, 55 per cent iron..... 5.70
Old Range nonbessemer, 51½ per cent iron 5.20
Mesabi nonbessemer, 51½ per cent iron 5.05

PORT HENRY IRON ORE
Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace.....$4.50
Old bed concentrates, 63 per cent..... 5.25
Harmony, cobbed, 63 per cent..... 5.25
New bed, low phos., 65 per cent..... 7.50
Lump ore for fix..... 6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 29 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, nominal.

Caucasian, 48 to 50 per cent, c.i.f. Atlantic ports, 28 to 29 cents per unit.

Fluor Spar

Washed gravel, Kentucky and Illinois mines, per ton.....$16.00 to 17.50

Rivets

Structural rivets, Pittsburgh.. 2.40c to 2.65c
Boiler rivets, Pittsburgh..... 2.50c to 2.75c
Rivets, ⅞-inch and smaller.70 off to 70 and 5 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed square or hexagon blank or tapped .....$4.50 off list
Cold punched square or hexagon blank or tapped .....$4.50 off list
Cold punched semifinished hexagon nuts ½-inch and larger.....75-10 off
Cold punched semifinished hexagon nuts ⅞-inch and smaller.....80-10 off
Case hardened, finished, hexagon.....70 off
Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
½ x 6 inches, smaller and shorter

Rolled thread .....60-10 off
Cut thread .....60 off
Larger and longer.....60 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread .....60-10-10 off
Cut thread .....60-10 off
Larger and longer.....60-10 off
(¾ x 4 inches, cold punched nuts)
Cut thread .....50-10 off
Larger and longer.....30-10 off
Lag screws .....60-10-10 off
Plow bolts Nos. 1, 2 and 3 heads .....50-10 + 20 off
Tap bolts .....30-10 off
Bolt ends with hot pressed nuts.....60-10 off
Blank bolts .....60-10 off
Rough stud bolts with nuts.....50-10 off

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½

Lap Weld

2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½

REAMED AND DRIFTED
Butt Weld

1 to 3-inch	69	56½

Lap Weld

2-inch	62	49½
2½ to 6-inch	66	53½

EXTRA STRONG—PLAIN ENDS
Butt Weld

⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½

Lap Weld

2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½

DOUBLE EXTRA STRONG
Butt Weld

½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½

Lap Weld

2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS
Butt Weld

	Black	Galvanized
⅛ and ¼-inch	3½	+22½
⅜-inch	36½	18½
½-inch	42½	27½
¾-inch	44½	29½
1 to 1½-inch	44½	29½

Lap Weld

2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS
Butt Weld

¼ and ⅜-inch	+ 4½	+37½
½-inch	35½	23½
¾-inch	42½	28½
1 to 1½-inch	44½	30½

Lap Weld

2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½

DOUBLE EXTRA STRONG
Butt Weld

½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½

Lap Weld

2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. 4-Point differential

STEEL

1¼-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53

IRON

1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28

SEAMLESS
Hot-rolled or cold-drawn

1-inch	56
1¼ and 1½-inch	48
1¾-inch	32
2 and 2¼-inch	35
2½ and 2¾-inch	39
3-inch	43
3¼ to 4-inch	48
4½ and 5-inch	40

Carload discounts 4 points larger.

Warehouse Prices

STEEL BARS

Boston	2.755c
Buffalo	2.75c
Chicago	2.60c
Cincinnati	2.60c to 2.85c
Cleveland	2.56c
Detroit	2.58c
New York	2.73c
Philadelphia	2.70c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.575c
St. Paul	2.76c
Los Angeles	3.40c

IRON BARS

Boston	2.755c
Buffalo	2.45c
Chicago	2.48c
Cincinnati	2.50c to 2.75c
Detroit	2.58c
New York	2.48c to 2.58c
Philadelphia	2.55c
St. Louis	2.575c

SHAPES

Boston	2.855c
Buffalo	2.85c
Chicago	2.70c
Cincinnati	2.70c to 2.95c
Cleveland	2.66c
Detroit	2.68c
New York	2.83c
Philadelphia	2.85c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.675c
St. Paul	2.76c
Los Angeles	3.50c

PLATES

Boston	2.855c
⅜-inch	3.04c
Buffalo	2.85c
Chicago	2.70c
Cincinnati	2.70c to 2.95c
Cleveland	2.66c
Detroit	2.68c
New York	2.83c
Philadelphia	2.85c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.675c
St. Paul	2.86c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston, ⅜-inch	3.70c
Buffalo	3.80c
Chicago	3.75c
Cincinnati	2.60c to 2.85c
Cleveland	3.25c to 3.50c
Detroit	3.58c
New York	3.78c
Philadelphia	3.40c
San Francisco	4.50c
Seattle	4.65c
St. Louis	2.725c
St. Paul	3.91c
Los Angeles	4.70c

NO. 28 BLACK SHEETS

Boston	4.90c
Buffalo	4.60c
Chicago	4.45c
Cincinnati	2.85c
Cleveland	4.00c
Detroit	4.38c
New York	4.35c
Philadelphia	4.25c
San Francisco	5.80c
Seattle	5.65c
St. Louis	4.45c
St. Paul	4.73c
Los Angeles	5.80c

NO. 28 GALVANIZED SHEETS

Boston	5.90c
Buffalo	5.60c
Chicago	5.45c
Cincinnati	5.20c
Cleveland	5.00c
Detroit	5.38c
New York	5.35c
Philadelphia	5.25c
San Francisco	6.65c
Seattle	6.65c
St. Louis	5.45c
Los Angeles	6.65c

BANDS

Boston	3.90c
Buffalo	3.40c
Chicago	3.35c
Cincinnati	3.35c to 3.60c
Cleveland	3.50c
Detroit	3.33c
New York	3.38c
Philadelphia	3.35c
San Francisco	4.05c
Seattle	4.00c
Los Angeles	4.30c

HOOPS

Boston	4.40c
Buffalo	3.55c
Cleveland	3.50c
Detroit	3.48c
New York	3.78c
Philadelphia	3.75c
Seattle	4.75c

COLD ROLLED SHAFTING

Boston (rounds)	3.50c
Buffalo	3.55c
Chicago (rounds)	3.55c
Cincinnati (rounds)	3.35c to 3.45c
Detroit (rounds)	3.35c
New York	3.50c
New York (flats, squares and hexagons)	4.00c
Philadelphia (rounds)	3.35c
San Francisco	4.80c
Seattle	5.00c
Los Angeles	5.10c
Boston (flats, squares and hexagons)	3.90c to 4.00c

Mansfield Sheets are made from our own Bottom Poured Ingots.

Mansfield Sheets are guaranteed to be unusually low in sulphur.

This illustration above shows our new 24" Sheet Bar Mill, which, with our new 32" Blooming Mill and our New Open Hearth Furnaces enable us to positively control the quality of Mansfield Sheets.

MANSFIELD QUALITY SHEETS

AUTOMOBILE SHEETS
Body Stock; Flat Fender and Hood Stock; Cowl Stock;
Radiator Casing Stock; Crown Fender Stock

METAL FURNITURE SHEETS

ENAMELING STOCK
For Vitreous Enameling

BLUED STOVE PIPE and ELBOW STOCK

MILK CAN STOCK

We solicit your inquiries

The Mansfield Sheet & Tin Plate Co.
MANSFIELD, OHIO

District Sales Representatives

The L. D. Rockwell Co., No. 2 Rector St., New York, N. Y.; D. B. Coey, 1018 Standard Oil Building, Chicago, Ill.; Mr. Geo. W. House, 1822 Ford Building, Detroit, Mich.; The L. D. Rockwell Co., No. 1201 National Bank Bldg., Cleveland, O.; The Maynard French Steel Co., 516 Mercantile Library Bldg., Cincinnati, O.; Walter G. Clark, Inc., 106 N. Third St., St. Louis, Mo.; Walter G. Clark, Inc., 313 American Bank Bldg., Kansas City, Mo.; Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.; Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.; Mr. Herbert P. Hill, 401 Continental Trust Bldg., Washington, D. C.; Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.; Wm. P. Horn Co., 301 Kerckhoff Bldg., Los Angeles, Cal.; Wm. P. Horn Co., Dekum Bldg., Portland, Oregon; Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seatt'e, Wash.; Mr. Edwin Schofield, 45 Jarvis St., Toronto, Ontario, Canada.

East of the Mississippi

(*Continued from Page 263*)

MEADVILLE, PA.—The Champion Tool Co., Pine street, plans two plant buildings, one to be 1-story, 100 x 200 feet, and the other 2-stories, 60 x 60 feet.

PHILADELPHIA—The general contract for a $46,000 plant for the Gilbert Spruance Co. has been awarded to Harry Gill, Jr.

PHILADELPHIA—A $50,000 garage will be erected by Carr & Courtenay, general contractors, for H. F. Newton.

PHILADELPHIA—A. B. Dutt Co., Inc., 1736 North Mascher street, plans a boiler house, 1-story.

PHILADELPHIA—Contract for a $35,000 public garage for Jacob Pinfero, has been awarded to the Connen Construction Co.

PHILADELPHIA—The William Steele & Sons Co. has been awarded a contract for an office and machine shop for the H. T. Potts Co.

PHILADELPHIA—The Standard Steel Works Co. has increased its capital stock from $3,000,000 to $6,000,000.

PHILADELPHIA—The Kellwig Silk Dyeing Co. plans a machine shop and garage, 1-story, 40 x 240 feet, to cost about $45,000.

PHILADELPHIA—The James H. Billington Co., 1539 Randolph street, has started work on a machine shop and storage building, 2-stories, to cost $40,000.

PHILADELPHIA—The Roberts & Mander Stove Co., this city, has awarded a contract to the Austin Co. for a 1-story, 130 x 155-foot plant.

PITTSBURGH—The National Metal Products Co., North Side, plans a factory building, 3-stories, 80 x 120 feet, to cost $100,000.

PITTSBURGH—The Federal Electric & Mfg. Co., 501 Chartiers street, maker of electric switches, etc., has purchased a 4-story factory building at McKees Rocks, Pa., which it will occupy.

POTTSTOWN, PA.—The Pottstown Machine Co. plans to enlarge its plant at an estimated cost of $50,000.

READING, PA.—The brass foundry of the Chantrell Tool Works recently was damaged by fire.

READING, PA.—The Daniels Motor Car Co. will erect a service and repair station in Brooklyn to be operated as a factory branch.

READING, PA.—The Progressive Iron Works is being organized with $20,000 capital stock, by Daniel J. Kramer, A. L. Loy and Augustus C. Loehrig.

TEMPLE, PA.—A foundry is to be established here by a new company which now is being formed. S. S. Staley is one of the organizers.

WAYNESBORO, PA.—The Frick Co. will take bids soon for a foundry, 1-story, 300 x 600 feet, to cost about $200,000.

MEMPHIS, TENN.—The Memphis Wire & Iron Works is reported planning a plant. W. A. Haglin is president of the company.

NORFOLK, VA.—After more than two years of tentative negotiations, the Verginian railway has definitely announced that work will be started immediately on the erection of a $3,000,000 coal handling pier at Sewells Point, near here.

PEACH CREEK, W. VA.—The Chesapeake & Ohio railroad, Richmond, Va., has awarded a contract for a 1-story machine shop, round house and power house here, to cost $250,000.

HUNTINGTON, W. VA.—The Lawton Chemical Co., Inc., has been incorporated with 1000 shares of no par value by B. A. Brown, L. R. Remke, A. G. Remke, H. S. Irons and H. H. Randolph.

PEACH CREEK, W. VA.—The Chesapeake & Ohio railroad will expend $370,000 on an extension of its repair shop here.

WHEELING, W. VA.—The Aqua Vacuum Co., vacuum cleaners, has been incorporated with $25,000 capital stock, by Michael M. Groman, I. E. Ewing and Harry Himmerman.

ANTIGO, WIS.—A sawmill, dry kiln and factory addition, 80 x 200 feet, will be built by Mattefs Bros. Co., manufacturer of interior woodwork, cabinets, hardwood toys and novelties and similar articles. The factory addition will be started at once. About $70,000 will be spent for buildings and equipment.

APPLETON, WIS.—The Scolding Locks Hair Pin Co. will build a factory at Appleton Junction, costing about $75,000.

APPLETON, WIS.—Earl F. Miller, Inc. has taken the general contract to build a $25,000 garage and repairshop for the G. R. & S. Motor Co. on Washington street.

BOSCOBEL, WIS.—Bids are being taken by C. P. Miller & Son for a 1-story garage, 50 x 125 feet, to cost about $25,000.

EAU CLAIRE, WIS.—Containers for milk, butter and other foodstuffs will be manufactured by the Sanitary Novelties Co. of Eau Claire, which has been incorporated with $25,000 capital by F. A. Berg, J. E. Llewellyn and L. Zarbeck.

GREEN BAY, WIS.—The Brown county highway commission has let the contract for the Wrightstown-West Holland bridge, a combination steel and reinforced concrete span, to the Jorgenson Construction Co., Denmark, Wis.

MADISON, WIS.—J. B. Sanborn, W. J. P. Aberg and C. W. Kernston have incorporated the Middle Wisconsin Power Co. with $25,000 capital and will start work soon on the construction and equipment of a water power unit near Madison.

MARINETTE, WIS.—The Marinette-Menominee Light & Power Co., which recently was taken over by the Wisconsin Public Service Co., Milwaukee, will install additional hydroelectric generating equipment in its plant at Menominee, Mich., and built new transmission lines.

MARINETTE, WIS.—A 1-story addition, 50 x 100 feet, will be erected by the Heath Cedar Co. to its sawmill and general woodworking plant at State and Sherman streets to provide facilities for making interior finish and silo material. Twenty new woodworking machines with individual electric motor drive are being purchased as equipment.

MILWAUKEE—The Acme Gas Mixer Co., founded at Superior, Wis., in 1920 by C. A. Peterson, is seeking a new location which needs a new plant to handle its business.

RIVER FALLS, WIS.—The state board of normal regents probably will let the contract for boilers, breeching, piping and conduits for the enlargement of the River Falls Normal school power and heating plant to the Zuehlke-Stohr Heating Co., Milwaukee.

UNION GROVE, WIS.—Contracts for the equipment of the power and heating plant of the new state home for epileptics here have been let.

WAUKESHA, WIS.—Architect H. C. Hengels, Colby-Abbot building, Milwaukee, is preparing plans for an addition to the power house and refrigerating plant of the White Rock Mineral Springs Co. at Waukesha, Wis.

WAUKESHA, WIS.—Harry L. Horning, secretary and chief engineer, and S. A. Perkins, treasurer of the Waukesha Motor Co., are associated with Lewis K. Wilson in the organization of the Waukesha Stanchion Co., which has been incorporated under the laws of Wisconsin with $25,000 capital to manufacture steel stanchions and general metal barn equipment.

West of the Mississippi

DINUBA, CAL.—The Dinuba Agricultural Works has been incorporated to manufacture and deal in machinery with $100,000 capital stock.

LOS ANGELES—Hnery Olson, Seventeenth and Santee streets, plans a 1-story machine shop, 100 x 150 feet.

LOS ANGELES—The Illinois Electric Co., maker of electrical specialties, plans a 4-story building, 50 x 137 feet, to cost $65,000.

SAN FRANCISCO—E. T. Meakin, 409 Sixth street, has awarded a contract for a 1 and 2-story, 75 x 100-foot machine shop, to cost $18,000.

Business Changes Recently Announced

THE Conveyors Corp., of America, 326 West Madison street, Chicago, has appointed the Mid-West Engineering Sales Co., Masonic Temple, Cedar Rapids, Iowa, representatives in eastern Iowa for the sale of coal handling equipment of the monorail type. J. W. Holden is manager of the Mid-West company.

* * *

Notice of dissolution has been filed by the Aetna Steel Products Co., 30 Church street, New York.

* * *

Control of the Southern Gear Co., Knoxville, Tenn., has been acquired by the Pilliod Co., Swanton, O., manufacturer of locomotive valve gears.

* * *

The Detroit Stoker Co., 7342 Woodward avenue, Detroit, has acquired the plant of the Van Blerck Motor Co., Monroe, Mich.

* * *

Knickerbocker & Rockwell is the name of a new company organized at 2 Rector street, New York, to specialize in railway supplies and specialties.

* * *

Burt Harris, 30 Church street, New York, iron, steel and metals, has taken over exclusive sales of the Mineral Oil Paint Co., Port Allegany, Pa.

SAN FRANCISCO—L. R. Lurie, Mills building, plans a 1-story machine shop, 10 x 49 x 165 feet, to be leased by the Hubbard Machine Co., 615 Howard street, manufacturer of pumping machinery. The building will cost about $17,600.

SOUTH TAFT, CAL.—The plant of the Midway Foundry recently was damaged by fire.

BRECKENRIDGE, COLO.—The Glenwood Light & Power Co. is constructing a new building.

WINCHESTER, IDAHO—The Craig Mountain Lumber Co. plans 10 miles of logging railroad.

BATON ROUGE, LA.—The Baton Rouge Electric Co. plans a building at Florida and Fifth streets.

CLOQUET, MINN.—The Northwestern Paper Co. plans a mill building, 2-stories, 200 x 500 feet, to cost about $500,000.

ST. PAUL—The Washington Foundry Co., Eagle and Washington streets, has awarded a contract for two buildings, one to be 1-story, 71 x 166 feet, and the other, 2-stories, 22 x 100 feet.

CARTHAGE, MO.—The Carthage Superior Spring Bed Co. is reported planning a factory building to cost about $40,000.

ST. JOSEPH MO.—The Auto Specialty Mfg. Co. plans a factory building addition to cost $100,000.

ALBUQUERQUE, N. MEX.—The Santa Fe railroad plans a boiler and tank shop at an estimated cost of $500,000.

CROSBYTON, TEX.—The Caprock Light & Power Co. has been incorporated with $40,000 capital stock by S. A. Guy, J. C. Orr and E. H. Wheat.

DALLAS, TEX.—The Columbia Fence & Wire Co. plans a plant addition, 200 x 212 feet.

GRAHAM, TEX.—The United Tank Co. has been incorporated with $24,000 capital stock, by W. H. Dyer, M. F. Russell and P. K. Deats.

SOUTH BEND, TEX.—The O. K. Pipe Threading Co. has been incorporated by W. F. Lindley, L. V. Hoyt, and others.

WACO, TEX.—The Missouri, Kansas & Texas railroad plans a locomotive shop, 1-story, 148 x 475 feet.

OLYMPIA, WASH.—Contract to build a 700-foot steel bridge on the Inland Empire highway across the Snake river at Central Ferry, has been awarded the Penn Bridge Co., Beaver Falls, Pa.

SEATTLE—The Chinook Iron Co. has been incorporated with $100,000 capital stock by W. W. Percy, and F. W. Harris.

SEATTLE—The Lake Union Dock Co. has increased its capital stock from $25,000 to $40,000.

SPOKANE—Lee Richardson is building a brick machine warehouse at 1020 Division street at an estimated cost of $25,000.

Business in Canada

NEW WESTMINSTER, B. C.—The Westminster Paper Mills, Ltd., has let the general contract to the Dominion Construction Co., 509 Richards street, Vancouver, B. C., for a paper mill here.

VANCOUVER, B. C.—The Canadian Pacific railroad plans a $2,000,000 pier and dock in this

GALT, ONT.—The A. D. Porter Mfg. Co., Ltd., has been incorporated as a patternmaker, engineer, etc., with $40,000 capital stock, by Alexander D. Porter, John Sloan and George Hancock.

HAMILTON, ONT.—The Canadian By-Products Co. has been incorporated to manufacture fire brick and refractories with a capital stock of $600,000. It is the intention of the company to commence building operations immediately.

LAKEFIELD, ONT.—The Canada Cement Co. is proceeding with the reconstruction of its mill, which will have a capacity double that of its old plant.

MONTROSE, ONT.—The Canadian Aloxide Co. has awarded a contract for a machine shop addition, 2-stories, 50 x 100 feet, to cost $50,000.

ST. THOMAS, ONT.—Lorne Tractors, Ltd., has been incorporated to manufacture tractors, engines, machinery, etc., with $300,000 capital stock, by Hugh C. McKillop, Neil F. Campbell and Thomas R. Small.

TORONTO, ONT.—The Durant Motors of Canada is receiving bids for the erection of an addition to its plant at Leaside.

TORONTO, ONT.—Lighting Fixtures, Ltd., has been incorporated with $40,000 capital stock, by Arthur Knight, Roderick Grant and Clarence C. Bothwell.

TORONTO, ONT.—Radio Mfgr. & Distributor, Ltd., has been incorporated with $250,000 capital stock, by Thomas M. Phelan, Gordon G. Balfour and Edward A. Richardson.

TORONTO, ONT.—The Toronto Laundry Machine Co., Ltd., has been incorporated with $50,000 capital stock, by Frank A. Gaul, Robert J. Morrow and B. N. Davis.

TORONTO, ONT.—Canadian Brandes, Ltd., has been incorporated to manufacture telephone apparatus, etc., with $5000 capital stock, by Harold M. Daly, Lillian Corbett and James Porter.

HULL, QUE.—The Mead Rubber Co., Ltd., has been incorporated with $2,500,000 capital stock, by William Douglas, Donald Douglas and W. N. Robinson.

MONTREAL, QUE.—The Whitecross Co., Ltd., has been incorporated to manufacture wire and wire products with $25,000 capital stock, by Frank B. Common, Francis Bush and Herbert W. Jackson.

New Trade Publications

POWER HOE—The Link-Belt Co., Chicago, has published a 24-page illustrated booklet in which a power hoe for use in bulk material storage, is described and illustrated. The booklet is replete with illustrations showing the hoe in action. A number of line drawings are also given.

IRON—The Penn Iron & Steel Co. Creighton, Pa., has published an interesting 32-page illustrated booklet in which the manufacture of iron is described and illustrated. The first part of the booklet contains a chapter on the first rolling of iron bars in America. The description of present practice is written in a nontechnical fashion.

MEASURING TOOLS—The Van Keuren Co., Boston, is circulating a catalog in which measuring tools are described and illustrated. The tools and equipment described include combination precision gage blocks, gage block accessories, plug gages, measuring wires for screw threads and profile gages. In addition surface plates and light wave measuring outfits are described.

MALLEABLE NICKEL—The American Nickel Corp., 740-746 Oliver building, Pittsburgh has published a 12-page booklet containing a resume of the properties and uses of malleable nickel. Analyses of the metal rolled in the company's mill at Hyde, Clearfield county, Pa. are presented and a list of the products rolled, pressed, drawn or spun is given.

PNEUMATIC TOOLS—The Chicago Pneumatic Tool Co., New York, has published a large illustrated folder in which pneumatic tools and equipment are described and illustrated. The tools described include grinders, drills, air hoists, chipping hammers, steam engines, compressors, riveting hammers, bolt drivers, holder-ons, etc. A second bulletin, containing the same line of descriptive matter, but many more illustrations of the tools in actual use, also has been published by the company.

METAL SPRAYING PROCESS—The Metals Coating Co. of America, Philadelphia, has published an 18-page illustrated folder in which a process and apparatus for simultaneously melting and atomizing the commercial metals, either in wire or dust form and impacting them on any surface are described. It is adapted for use either in the shop or in the field on any material regardless of its size, character, shape or position. Small-sized pieces may be treated in bulk. A complete description of the process and apparatus is given.

INDUCED DRAFT FAN—A 4-page illustrated folder has been published by the B. F. Sturtevant Co., Boston, in which attention is called to an induced draft fan which acts as a cinder separator. According to the folder a large New York city power company in 1916 issued specifications calling for an induced draft fan which would at the same time act as a cinder separator. No quotations were received as there was nothing of the kind on the market. The B. F. Sturtevant Co. became interested in the problem, and it was found that a cinder separating fan could be built without taking any more room and without requiring any more attention than an ordinary induced draft fan. On test as a cinder separator, the fan removed 75 to 90 per cent of the solid matter in the gases. Existing installations include plants in New York, Rochester, N. Y., Trenton, N. J., Salem, Mass., Fitchburg, Mass., and numerous other cities. A line drawing of the equipment is given.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$11.50 to 12.50
Boston (dealers)	10.50 to 11.00
Buffalo	17.00
Chicago	15.50 to 16.00
Cincinnati	13.50 to 14.00
Cleveland	14.75 to 15.00
Detroit (dealers)	12.75 to 13.25
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	10.00 to 10.50
Pittsburgh	16.50 to 17.00
San Francisco	10.00
St. Louis	14.50 to 15.00
Valleys	17.50 to 17.75
No. 1 railroad steel New York (dealers)	11.00 to 11.50

BUNDLED SHEETS

Buffalo	$11.00 to 11.50
Cleveland (hydraulic)	13.00 to 13.25
Cincinnati	7.50 to 8.00
Eastern Pennsylvania	13.50 to 14.00
Pittsburgh	14.50 to 15.00
St. Louis	6.50 to 7.00
Valleys (hydraulic)	15.00 to 15.50

STEEL RAILS, SHORT

Birmingham	$15.00 to 15.50
Boston (dealers)	10.50 to 11.00
Chicago	17.50 to 18.00
Cincinnati	15.00 to 15.50
Cleveland	13.75 to 14.25
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	$15.00 to 15.50
Boston (consumers)	13.50 to 14.00
Buffalo	13.00 to 13.50
Chicago	16.50 to 17.00
Cincinnati (net)	11.50 to 12.00
Cleveland	14.00 to 14.50
Detroit	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York	10.50 to 11.00
Pittsburgh	13.00 to 13.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	$18.00 to 18.50
Cincinnati	18.00 to 18.50
Eastern Pennsylvania	19.00 to 21.00
Pitts. billet and bloom crops	21.00 to 21.50

SHOVELING STEEL

Chicago	$15.00 to 15.50
Pittsburgh	14.75 to 15.25
St. Louis	14.00 to 14.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	$18.00 to 18.50
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	18.00 to 18.50
St. Louis	18.50 to 19.00

COMPRESSED SHEETS

Buffalo	$14.25 to 14.75
Chicago	12.50 to 13.00
Pittsburgh	15.25 to 15.75

FROGS, SWITCHES, GUARDS

Chicago	$15.00 to 15.50
Eastern Pennsylvania	15.00 to 15.50
St. Louis	15.00 to 15.50

BOILER PLATE, CUT

Detroit (dealers)	$8.00
St. Louis (dealers)	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	$16.25 to 16.75
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.50 to 14.00
Boston (dealers)	11.50 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	15.50 to 16.00
Chicago, No. 2	15.00 to 15.50
Cincinnati, No. 1	13.00 to 13.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	18.00 to 18.50
Pittsburgh, No. 1	15.00 to 15.50
Pittsburgh, No. 2	16.50 to 17.00
New York, No. 1 (dealers)	13.50 to 14.00
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	13.50 to 14.00

WROUGHT PIPE

Boston (dealers)	$8.00 to 8.50
Buffalo	12.00 to 12.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.25 to 9.50

YARD WROUGHT

Boston	$10.50 to 11.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

CITY WROUGHT

New York, long	$10.75 to 11.25

BUSHELING

Buffalo, No. 1	15.00 to 15.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	7.50 to 8.00
Cincinnati, No. 1	11.00 to 11.50
Cleveland, No. 1	10.50 to 11.00
Cleveland, No. 2	9.00 to 9.50
Eastern Pennsylvania, No. 1	14.50 to 15.00
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	12.50 to 13.00
Detroit, No. 1	10.50 to 11.00

MACHINE SHOP TURNINGS

Birmingham	$7.00 to 8.00
Boston (dealers)	8.75 to 9.00
Buffalo	11.00 to 12.00
Chicago	9.50 to 10.00
Cincinnati (net)	7.50 to 8.00
Cleveland	11.75 to 12.00
Detroit (dealers)	8.75 to 9.25
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.00
Pittsburgh	13.50 to 14.00
St. Louis	7.50 to 8.00
Valleys	12.00 to 12.50

CAST IRON BORINGS

Birmingham (chemical)	$13.00 to 14.00
Birmingham, borings (plain)	9.00 to 10.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	9.50 to 10.00
Buffalo	13.50 to 14.00
Chicago	13.00 to 13.50
Cincinnati (net)	8.00 to 8.50
Cleveland	12.75 to 13.00
Detroit (dealers)	10.75 to 11.25
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania (chemical)	16.00 to 17.00
Pittsburgh	15.50 to 16.00
New York (dealers' price)	9.50 to 10.00
St. Louis	10.00 to 10.50
Valleys	14.25 to 14.75

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	$8.75 to 9.00
Cleveland	12.25 to 12.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.50 to 10.00

IRON AXLES

Birmingham	$14.00 to 15.50
Boston	$20.00 to 21.00
Buffalo	23.00
Chicago	25.50 to 26.00
Cincinnati	19.50 to 20.00
Detroit	20.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	25.50 to 26.00

IRON RAILS

Buffalo	$16.00 to 17.00
Chicago	18.50 to 19.00
Cincinnati	13.50 to 14.00
Cleveland	14.00 to 14.50
St. Louis	16.50 to 17.00

PIPES AND FLUES

Chicago	$11.00 to 11.50
Cincinnati	7.00 to 7.50
Cleveland	11.00 to 11.50
St. Louis	9.50 to 10.00

RAILROAD GRATE BARS

Buffalo	$14.00 to 14.50
Chicago	15.50 to 16.00
Cleveland	14.00 to 14.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50
St. Louis	15.00 to 15.50

FORGE FLASHINGS

Boston (dealers)	$9.00 to 9.25
Chicago, small	10.25 to 10.75
Cleveland, small	11.25 to 11.75
Cleveland, large	11.25 to 11.75
Detroit (dealers)	9.50 to 10.00

FORGE SCRAP

Boston	$8.00 to 8.50
Chicago	15.00 to 15.50
Eastern Pennsylvania, No. 1	13.00 to 13.50

ARCH BARS AND TRANSOMS

Chicago	20.00 to 21.00
St. Louis	20.50 to 21.00

ANGLE BARS—IRON

Chicago	$20.00 to 20.50
St. Louis	17.50 to 18.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$9.50 to 10.00
Buffalo	15.00 to 15.50
Chicago	13.50 to 14.00
Cleveland	12.75 to 13.00
Detroit	11.50 to 12.00
Eastern Pennsylvania	13.00 to 14.00
Pittsburgh	15.00 to 15.50
St. Louis	11.50 to 12.00

STEEL CAR AXLES

Birmingham	$15.00 to 15.50
Boston (dealers)	15.50 to 16.00
Buffalo	18.00 to 18.50
Chicago	17.50 to 18.00
Cleveland	17.00 to 17.25
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	15.00 to 18.00
Pittsburgh	16.00 to 16.50
St. Louis	18.50 to 19.00

SHAFTING

Boston (dealers)	$15.50 to 16.00
Chicago	20.00 to 20.50
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	15.00 to 16.00
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$14.00 to 14.50
Birmingham, tram car	14.00 to 15.50
Boston (consumers)	18.00 to 18.50
Buffalo, iron	17.50 to 18.00
Chicago, iron	19.00 to 19.50
Cincinnati	14.50 to 15.00
Cleveland, iron	13.00 to 13.50
Detroit	14.50
Eastern Pennsylvania, iron	18.50 to 19.00
New York, iron (dealers)	14.00 to 15.00
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	18.00 to 18.50
St. Louis, iron	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	$15.00 to 15.50
Boston (consumers)	18.50 to 19.00
Buffalo	18.50 to 19.50
Chicago, cupola	18.00 to 18.50
Cincinnati, No. 1, machinery, cupola (net)	15.50 to 16.00
Cleveland, cupola	17.00 to 17.50
Eastern Pennsylvania, cupola	18.00 to 20.00
New York, cupola (dealers)	16.50 to 17.00
Pittsburgh, cupola	19.00 to 19.50
San Francisco	23.00 to 24.00
St. Louis, agricultural	19.00 to 19.50
St. Louis, railroad	18.50 to 19.00
Valleys	18.00 to 18.50
Detroit, machinery (net)	15.50 to 16.00

HEAVY CAST

Boston (consumers)	$16.50 to 17.00
Buffalo	16.00 to 16.50
Cleveland	14.75 to 15.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	15.50 to 16.00
Pittsburgh	18.00 to 18.50
Detroit, automobile (net)	19.00 to 19.50

MALLEABLE

Boston (railroad)	$14.00 to 15.00
Buffalo	17.00 to 17.50
Chicago, railroad	17.50 to 18.00
Chicago, agricultural	17.50 to 18.00
Cincinnati, agricultural	12.00 to 12.50
Cincinnati, railroad	12.00 to 12.50
Cleveland, agricultural	12.50 to 13.00
Cleveland, railroad	15.25 to 15.50
Detroit	14.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	16.00 to 16.50
Pittsburgh, agricultural	13.00 to 13.50
St. Louis, agricultural	15.00 to 15.50
St. Louis, railroad	15.50 to 15.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	$15.00 to 15.50
Boston (dealers)	11.50 to 12.00
Chicago	16.25 to 16.50
Cleveland	16.00 to 16.50
Detroit (dealers)	11.50 to 12.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	17.50 to 18.00
St. Louis	16.00 to 16.50

LOCOMOTIVE TIRES

Chicago	$13.00 to 13.50
St. Louis	13.00 to 13.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$17.00 to 17.50
Eastern Pennsylvania	18.00 to 20.00
Pittsburgh	18.00 to 18.50

LOGEMANN

Double Ram Hydraulic

Scrap-Metal Presses

STANDARD

In Hundreds of Mills, Yards and Plants

Hydraulic-compressed scrap always commands the best prices. It is more conveniently stored—more economically handled—there is less loss from corrosion—less heat is required for remelting.

Loose Scrap is worth almost nothing.
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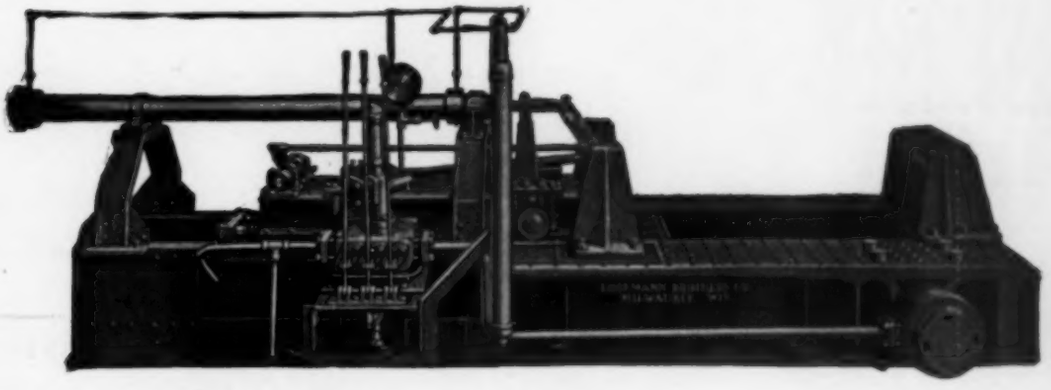
LOGEMANN BROTHERS CO., 3126 Burleigh St. MILWAUKEE, WIS.



We build Balers for All Purposes

Hand-balers for waste-paper, power and hydraulic balers for the textile trades, hydraulic presses for metal and waste trades.

Also Hydraulic Shaft Straighteners, Etc.

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products. 1913-1922. Compiled by The Iron Trade Review

1922	
July 19	$37.45
July 12	37.45
July 5	37.43
Average for June	36.96
June 28	37.26
June 21	37.12
June 14	36.74
June 7	36.72
May	36.49
April	34.42
March	32.97
February	32.86
January	33.35
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	$68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32
1918	
December	57.24
Novemb r	55.67
October	57.53
September	$56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089
1921	837,660	50,721	888,381

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217
1921	1,713,288

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133
1921	1,189,714	570,610	1,760,324

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748
1921	1,272,624

Bar Production

Gross Tons

Year	Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240
1921	198,324	1,367,430	1,565,754

Tube Production

Year	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725
1921	110,293	1,877,149	1,987,442

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116
1921	2,178,818

Iron and Steel Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.76
Newark, N. J.	6.05
Boston	6.55
Philadelphia	5.67
Pittsburgh	1.76
Chicago	4.79
St. Louis	5.80
Minneapolis, St. Paul	6.84
Buffalo to:	
Albany, N. Y.	$2.27
New England (rail)	4.91
New York and Brooklyn (rail)	4.91
Philadelphia	4.91
Rochester	1.39
Virginia furnaces to:	
Philadelphia	$5.17
New England	5.92
Brooklyn, Jersey City, Newark	5.54
Birmingham, Ala., to:	
Boston (rail)	$9.61
Boston (rail and water)	6.91
Cincinnati	4.05
Chicago	6.00
Cleveland	6.00
Louisville, Ky.	3.72
Minneapolis, St. Paul	8.76
New York	9.24
Philadelphia (rail)	7.81
Philadelphia (rail and water)	6.67
Pittsburgh	6.84
St. Louis	5.17
Seattle	20.16
Chicago to:	
Des Moines	$4.26
Minneapolis, St. Paul	3.04
Milwaukee	0.76
Moline, Ill.	1.77
Omaha	5.47
St. Louis	2.16
Ironton and Jackson, O., to:	
Chicago	$4.79
Cincinnati	2.27
Cleveland	3.02
Detroit	3.28
Indianapolis	2.90
Minneapolis, St. Paul	7.56

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.34
Philadelphia	0.325
Baltimore	0.315
Boston	0.365
Buffalo	0.265
Cleveland	0.215c
Cincinnati	0.295
Chicago	0.34
Detroit	0.295
Minneapolis and St. Paul	0.60
Kansas City	0.735
Denver	1.27
St. Louis	0.43
New Orleans	0.515
Birmingham	0.69
Pacific coast (all rail)	1.50
Pacific coast (tin plate)	1.20